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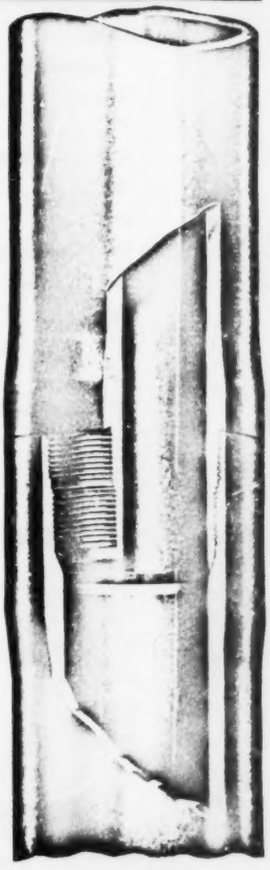

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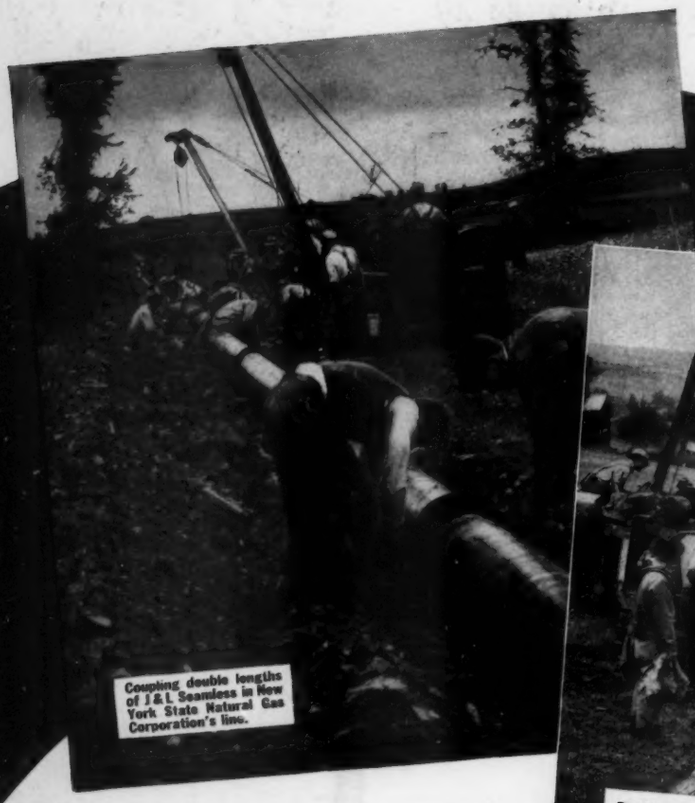

Coupling double lengths of J & L Seamless in New York State Natural Gas Corporation's line.

Bending line pipe to fit contour of ditch.

For ECONOMY and SAFETY

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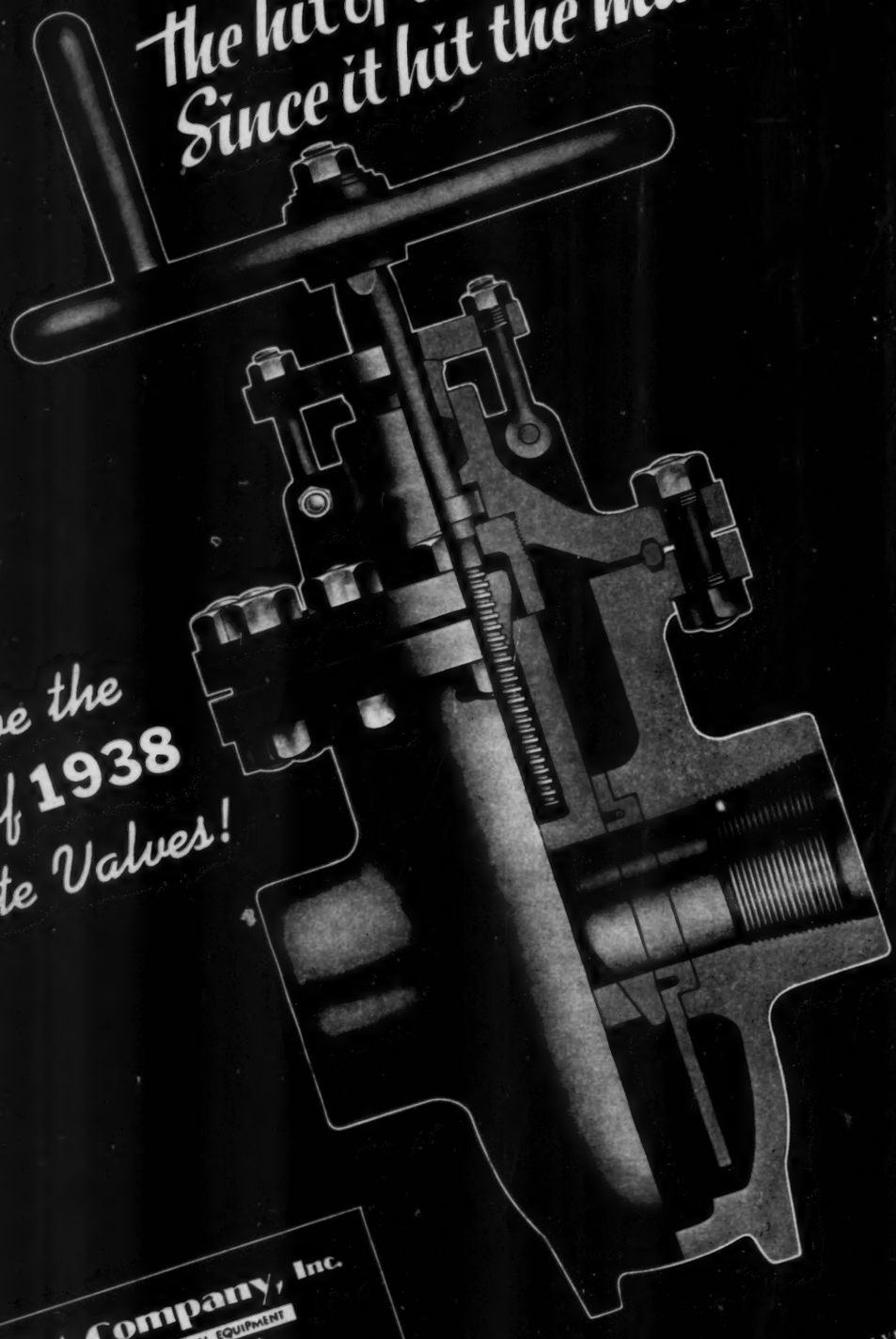

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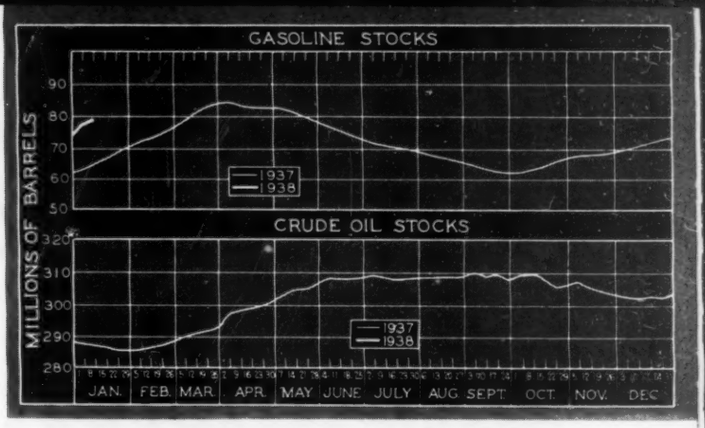


Less Runs to Stills Are Needed

DEVELOPMENTS of the past week tended to emphasize the necessity of further curtailments in both crude oil production and refinery operations—especially the latter. In the crude oil division operators were confronted with the 15-cent reduction applying to a large part of Michigan and 10-cent cut in Cat Creek, Mont. Across the Canadian line from Montana, Turner Valley crude oil and crude naphthas were reduced 22 cents per barrel.

CRUDE PRODUCTION *3,436,483 barrels daily average—down 10,523 barrels.*

CRUDE STOCKS *303,294,000 barrels as of December 25—up 253,000 barrels.*

GASOLINE STOCKS *79,331,000 barrels as of January 8—up 1,902,000 barrels.*

REFINERY RUNS *3,210,000 barrels daily week ending January 8—down 110,000.*

The quantity of crude oil involved in these reductions is relatively small and the crudes are not directly competitive with the bulk of the industry's production located in the states of the Southwest. The cuts, however, do reflect the lower refinery revenues which in these northern areas brought decisions to lower the prices paid by refiners for the raw material. They represent additional "local situations" which, as one major crude buyer has pointed out, are always a threat to the "general situation."

Statisticians who are closely watching the current developments in the demand for crude oil and refinery products are now suggesting that it may be obligatory over the next few weeks to curtail production so that it is substantially under the Bureau of Mines recommendations. This will be necessary, it is felt, because of the excess operations of refiners during the fall and early winter period and also because the government's future estimates may prove to be too high. It is pointed out that during the period of rapidly expanding demand of 1936 and 1937 the government's estimates were generally too low. Now that the demand curve is leveling off, the opposite situation may develop and monthly estimates may project higher operations in the fields and refineries than are needed.

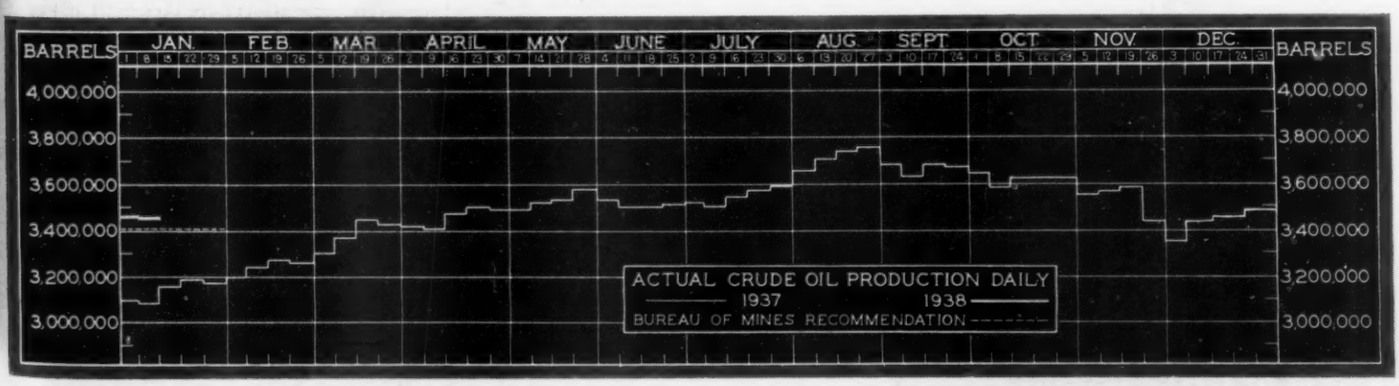
In this connection attention is called to the December data. Although crude production was kept under the recommendation, there was no reduction in crude stocks that month. In November, with a higher production, there was a large reduction in crude stocks. In the refinery division, gasoline stocks from December 4 to January 1 increased 7,098,000 barrels, or 253,000 barrels daily. This gain is about three times the seasonal increase justified for December in a healthy market situation. Considered from the standpoint of gasoline inventories, crude runs to stills in December were 200,000 to 250,000 barrels greater than they should have been.

While movement of burning oils has been heavy supplies are adequate and in East tankcar prices on kerosene, furnace oils and diesel fuels were lowered.

Daily Average Production for Week

	Jan. 8 1938	Bur. Mines Jan. est.	Jan. state allowables	Jan. 1 1938
Oklahoma City	120,975			109,550
Fitts	68,850			73,300
Remainder of state	349,000			350,825
Total Oklahoma	538,825	566,600	550,000	533,675
East Texas	492,150			491,200
West Texas	197,699			194,250
North Central Texas	106,297			106,199
Texas Panhandle	61,498			67,448
East Central Texas	86,000			85,798
Gulf Coast Texas	323,000			325,650
Southwest Texas	108,700			108,348
Total Texas	1,375,344	1,350,900	1,357,573	1,378,893
North Louisiana	78,385			76,375
Gulf Coast Louisiana	168,850			174,650
Total Louisiana	247,235	238,400	256,000	251,025
California	708,800	678,300	678,300	703,000
Kansas	162,650	179,300	186,472	166,600
Arkansas	42,530	35,200		48,795
Eastern fields	133,500	128,000		136,050
Michigan	51,389	54,100		50,078
New Mexico	107,130	103,100	104,600	107,600
Rocky Mountain area	69,080	72,900		71,290
Total United States	3,436,483	3,406,800		3,447,006

Decrease, 10,523 bbls. daily.



Refiners Planning Further Expansion in Operations

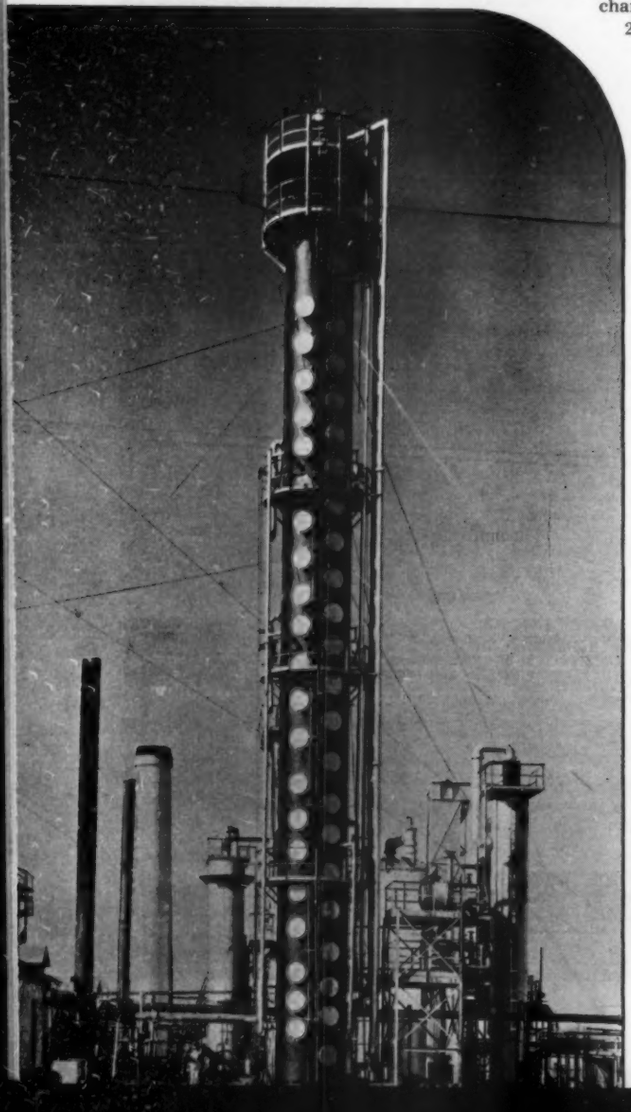
By C. O. WILLSON

Refiners within and outside the United States have just closed the year of greatest expansion in petroleum history and are started on another 12 months which will establish new records in manufacturing operations.

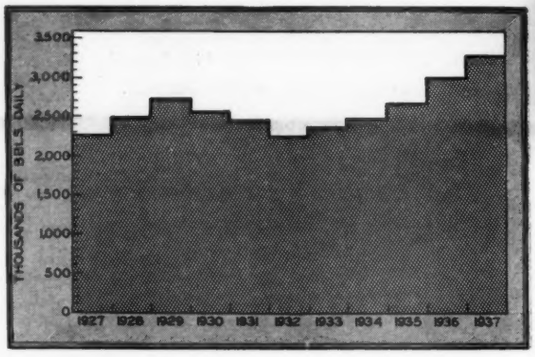
With a minimum of acclaim or other recognition by the industry generally, operators of 475 refineries in this country and 150 in other countries have absorbed a record-breaking output of crude oil, manufacturing it into several hundred finished products to supply constantly enlarging and more exacting markets. The fact that, at best, profits have been modest, has not deterred plant operators from continuing to enlarge and improve all phases of operations. The net result has been more and better products at low prices, which have greatly strengthened the place that petroleum has as an essential product in times of business recession as well as during periods of expanding prosperity.

This limited profit is responsible in part for the emphasis placed on improved processing methods with the objective of reducing costs to minimum figures. An outstanding reflection of this trend is the larger combination operations, necessitating lower capital expenditures and lower operating costs. Where possible, old units are being modernized to incorporate the new methods of manufacture. In many cases, however, owners are finding it more economical to junk units 10 or more years old and replace them with installations of larger capacities which manufacture products meeting the requirements of today's markets at lower costs.

The principal trends having a direct bearing on refinery operations are illustrated in the accompanying charts. In volume the more than 200 companies in the United States operating refineries ran a daily average of 3,250,000 bbls. (465,000 tons) of crude oil to their stills last year. This gain of 331,600 bbls. daily was the largest in the history of the industry. Outside the United States plants processed approximately 2,000,000 bbls. of crude oil daily, also a new yearly record.



Cracking tower, 80 feet high, at Long Beach, Calif., plant of Hancock Oil Co. (Inman photo)



Trend in total refinery crude runs in United States

1938 Operations

In regard to 1938, most estimates at this time project an increase of 5 per cent in refinery operations. This is based on a gain of 30,000,000 bbls. in motor fuel demand, which means an additional 65,000,000 bbls. of crude to be run to stills at refineries in the United States during the year. Thus, refinery runs should average at least 3,425,000 bbls. daily this year. The same percentage gain in demand is estimated for refineries located in other parts of the world.

These estimates of operations assume that petroleum demands outside this country will not decline from 1937 levels, thus providing outlets for the foreign refineries and assuring the continuance of the important export market to operators in this country. War and preparations for war are a substantial factor in this foreign demand. This fact and the possibility of serious economic disturbances during the year make this foreign market more difficult to estimate than the domestic outlets for 1938.

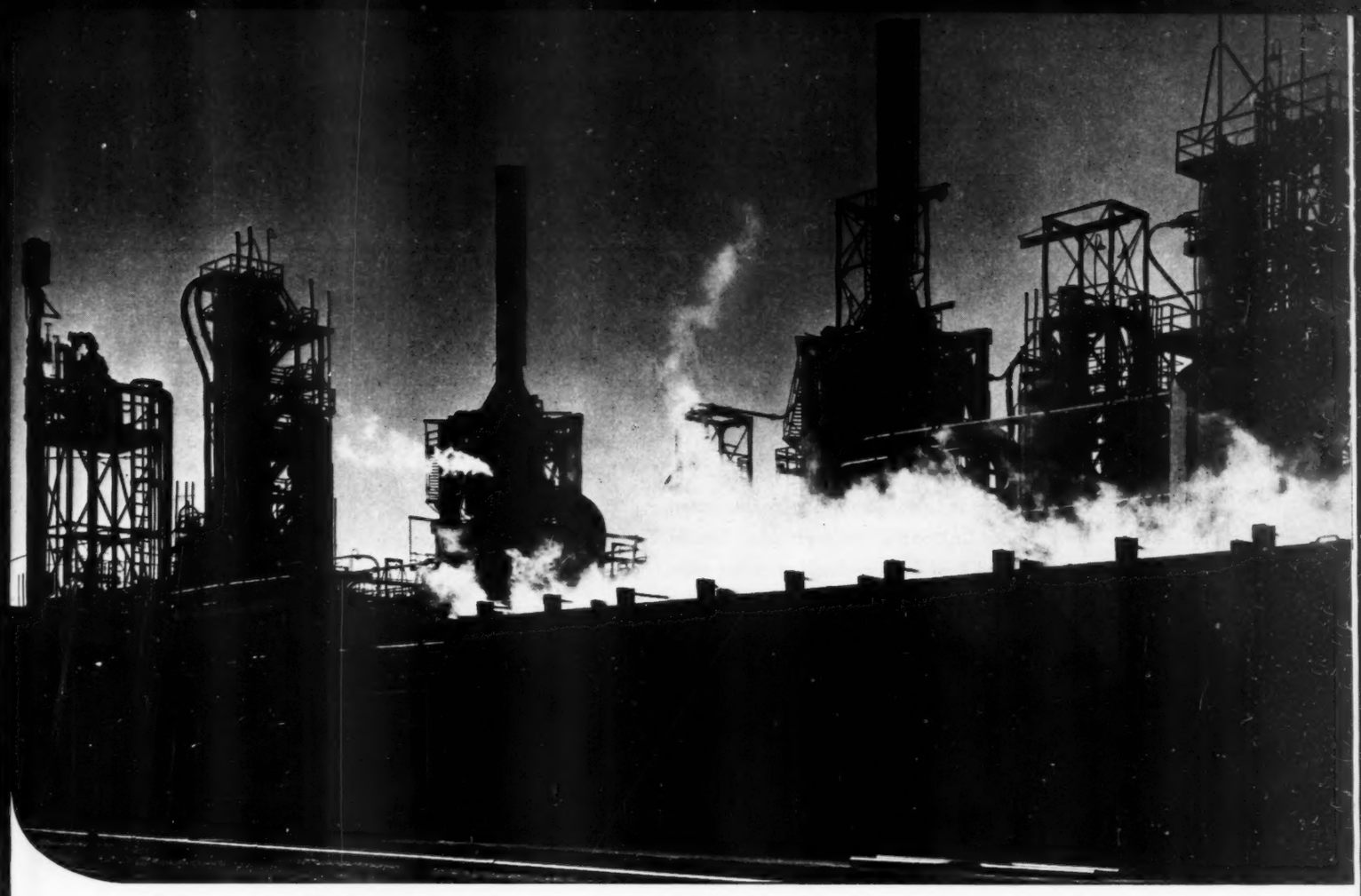
It should be pointed out that the 5 per cent estimated gain in domestic requirements presumes that the present business recession will continue with a substantial reduction in new-car registrations compared to 1937, and also a slowing up in oil-burner installations and a reduced industrial demand for heavy fuels. A business recovery later in the year will make the 5 per cent estimate too low.

Even with this small increase in demand refinery operators in United States for several weeks next summer will be called upon to refine approximately 3,750,000 bbls. of crude oil daily. It is no secret that several refiners last summer were hard pressed to take care of the peak gasoline needs. In some cases obsolete crude distillation and cracking units were again placed in service or new units were operated from 5 to 20 per cent in excess of rated capacities. This is one of the explanations for the reduction in gasoline yields last summer. The obsolete equipment gives lower gasoline yields and the same situation develops when newer units run more charging stocks than they are designed to refine efficiently. Some of the major enlargement programs now under construction are designed to take care of these peak requirements without sacrifice in operating efficiency.

Geographical Changes

Chart 2 indicates the geographical changes in refinery operations over the past five years. The greatest expansion has been in the Texas Gulf area, where several new plants have been built and existing plants enlarged. Water transportation, particularly important in export shipments; low rail rates to important consuming centers; relatively favorable labor and tax situations; increased crude oil supplies and climatic conditions—all have had a part in the steady expansion in Texas Gulf Coast refinery facilities.

One of the significant developments of the past few months is revealed in Bureau of Mines reports showing that the production of cracked gasoline exceeds that of the straightrun, the only gasoline known to refiners 25 years ago. The production of this synthetic gasoline cracked from gas oil and fuel oil has steadily increased in relation to straightrun aided in recent years by reforming and



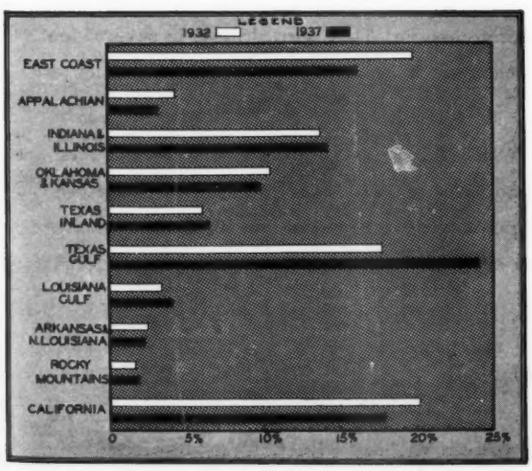
Combination topping and cracking units, Gulf Oil Corp. refinery, Port Arthur, Tex.

polymerization operations. In October cracked gasoline represented 47.2 per cent of the total motor fuel output; straightrun gasoline, 44.3 per cent, and natural gasoline, 8.5 per cent. Five years earlier the straightrun production was 50 per cent and cracked gasoline 42.2 per cent. Ten years ago this gasoline, obtained from the crude by natural distillation, represented 59 per cent of the total, and cracked gasoline 31 per cent. New cracking installations indicate that this trend will continue indefinitely.

While gasoline is still the most important product obtained in plant operations both in volume and value, burner-oil and diesel-fuel requirements are having their influence on plant yields and new construction. The situation for the country is revealed in the October report of the Bureau of Mines, which shows that the yield of distillates and gas oils represented 12.9 per cent of the refinery throughput. This compares with 9.5 per cent for the same month in 1932.

While overhead distillates are usually sold and used interchangeably as burner oils and diesel fuels, the tendency is to manufacture these oils for their special uses. This has complicated the problem of refiners and has emphasized the need of flexibility in processing methods. Some of the newer cracking units are being designed so that through control of temperatures, pressures and time the yields from several grades of charging stocks can be varied in line with the seasonal changes in demand for burner oils and motor fuels.

GEOGRAPHICAL CHANGES IN REFINERY RUNS



Per cent of total crude run at refineries by areas in the United States. Data based on October 1932 and 1937 reports of Bureau of Mines

$100,000,000 Construction

A number of other trends in refinery construction, made necessary by consumer requirements and the desire to obtain the largest yields of salable products, could be enumerated. Many of them are indicated in the accompanying list of installations of units recently completed or under construction at this time. The full list of more than 50 installations represents expenditures for new construction in excess of $100,000,000. Polymerization has definitely passed from the experimental stage and has become an essential phase of modern refinery operations where sufficient plant gases are available for processing. This and other operations have been fostered by the desire to increase octane ratings of motor fuels. Polymer gasoline has an octane rating of 85 to 100 and is especially valuable as blending material. The production of isooctane is increasing steadily, motivated largely by the desire to supply the high-octane motor fuels demanded by the aviation industry.

While not as prominent in new refinery construction as it was two or three years ago, the desire to improve the quality of lubricants accounts for several of the major installations of the past year, including some under construction. Solvent refining and dewaxing methods have improved in flexibility as to charging stocks and reduced capital expenditures and operating costs.

Hydrogenation

In one hydrogenation operation in this country a low-gravity, high-sulfur, asphaltic-base gas oil of little value is used as charging stock. In the operation a large part of the sulfur is removed as hydrogen sulfide gas. Hydrogen extracted from natural gas obtained from a line which serves the refinery with fuel is introduced into the operation.

The final product is a paraffinic distillate, from which a yield of gasoline is obtained in the rerun operation. The principal product of this operation, however, is a high-grade diesel fuel, which is sold in foreign markets.

TRENDS IN REFINERY DESIGN

Partial list of major installations showing types of processes and equipment recently installed or now being constructed at domestic and foreign refineries:

Atlantic Refining Co., Atreco, Tex. A complete refinery. The nucleus of the plant is a 22,700 bbl. combination unit to handle East Texas crude with an integral polymerization unit. The equipment includes a hydrogen sulfide removal plant. Kellogg.

Bradford Oil Refining Co. Bradford, Pa. Benzol-acetone dewaxing plant, 600 bbls. daily. Lummus.

Humble Oil & Refining Co. Baytown, Texas. Polymerization plant. This plant charges a mixture of refinery butanes and butylenes with normal and isobutane from the East Texas field. It produces approxi-

(Continued on Page 26)

SPARKS FROM THE NEWS

FIRST BREAK

The oil business received its first break in the present session of congress when a subcommittee deferred action on the proposal to change depletion deductions.

GASOLINE CONSUMPTION

Gasoline consumption is also somewhat concentrated. Eight states—New York, California, Pennsylvania, Illinois, Ohio, Texas, Michigan and New Jersey—ranking in the order named, have 50 per cent of the total demand in United States.

WATER ENCROACHMENT

Flood waters reach East Texas

CAPITAL EXPENDITURES

Fifty major installations at refineries recently completed or under construction represent expenditures in excess of $100,000,000. The manufacturing branch of the industry is constantly making large capital outlays in order to keep pace with the demand for more and better products.

OIL AND MUSIC

Oil and music may mix in Kansas this year. A nationally known annual musical festival is held at Lindsborg, McPherson County. An oil pool, the first for northern McPherson County, was opened near that town this week.

GASOLINE LINES

Extension of the Shell gasoline pipe line from Roxana, Ill., to Toledo and Columbus, Ohio, fills another gap in the high-consuming central states already served by gasoline pipe lines which originate in the Mid-Continent and Atlantic Seaboard.

KNOWN AND UNKNOWN

An analysis of the Soviet claims in regard to petroleum resources emphasizes the difference between the known and the possible oil reserves. The latter are much greater than the former.

EXTENDED LESSON

The Madison trial nears an end. The jury, locked up since early October, will shortly make known what it learned about the oil business in many weeks of concentrated study.

ON THE MOVE

The K.M.A. field of North Texas is another demonstration that conditions in the oil business are never static. It is now being taken out of the stripper class, where it was listed for several years, in order to prorate the production of one of the largest reserves discovered in 1937.

NEW "GAS-OIL RATIO"

A survey shows one gallon of oil is used to each 50.7 gallons of gasoline. Not so long ago the ratio was 20 to 1.

TOP TO BOTTOM

Several Gulf Louisiana operators literally know the water problem from top to bottom. They start drilling in several feet of water and encounter it frequently at subsurface points.

DISTURBING TOURISTS

Two hundred wells will be drilled in the Long Beach area of the Wilmington field the first half of 1938. An observer points out such activity must be disturbing to winter tourists bent on leisure.

FEDERAL DIVERSION

When federal gasoline and lubricating oil taxes first became effective proponents justified action on the ground that the revenue would be used for highway construction. The new budget reduces federal highway participation to $125,000,000, but the $240,000,000 gasoline and oil taxes will continue.

McPherson Operators Develop New Pools and Extensions

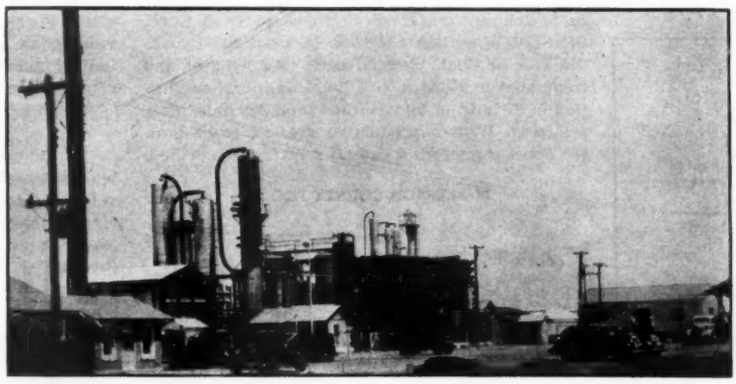
By DAL DALRYMPLE

One year from now, when reviews of Kansas oil and gas operations in 1938 are written, developments in McPherson County will share largely in the verbal round-up unless the unforseen occurs to retard activity that is expected to increase during the next 12 months.

The outlook for McPherson County, indeed, is bright. There may be no such intensive activity as in the heydey of the Ritz-Canton field nor no such drilling boom as some of the more westerly counties will enjoy, but a steady development program is indicated. The Graber pool, yet to be defined, will provide much of the activity. Wilcox sand production in the Ritz-Canton area will see further development. Additional exploration in the old Wenger and new Bornholdt sectors, and in the newly opened area near Lindsborg, more drilling in the Voshell, Johnson and Chindberg districts, and considerable wildcatting is anticipated.

At the turn of the year a growing interest was in evidence in development of Wilcox sand or Simpson pay horizons adjacent to the Canton townsite and on the east side of the Ritz-Canton field. This work largely is centered in sections 16 and 21-19-1w. A recent tabulation included 10 new producers completed in the Ordovician sand pay at around 3,400 feet, with a combined potential exceeding 1,500 bbls. Initial potentials ranged as high as 459 bbls. of oil daily. The actual producing area in this sector to date covers only 140 acres, but productivity of a recent south extension indicates the Wilcox producing area, while definitely considered to be small, will spread to at least twice its present area. No failures were recorded in this immediate sector in the last six months of the new development.

The most recent completion was E. B. Shawver and others No. 1-A Kaegi, NW cor. section 21-19-1w, a twin well to No. 1 Kaegi, a Viola lime producer. It topped Wilcox sand at 3,411 feet, was bottomed at 3,434 feet and had initial production of 214 bbls. of oil. Completion of this well, which is characteristic of other recent Wilcox producers, may force deepening of west and northwest offsets, now producing from Viola lime at 3,385 feet, or the drilling of twin tests.



The Bay refinery, McPherson, recently damaged by fire, is being enlarged

The deep pay horizon recently was extended one-fourth mile south at Tom C. Johnson and Darby Petroleum Corp. No. 3 Shaw, NE NW SW section 21-19-1w, which made potential of 298 bbls. of oil from Wilcox sand, total depth 3,426 feet.

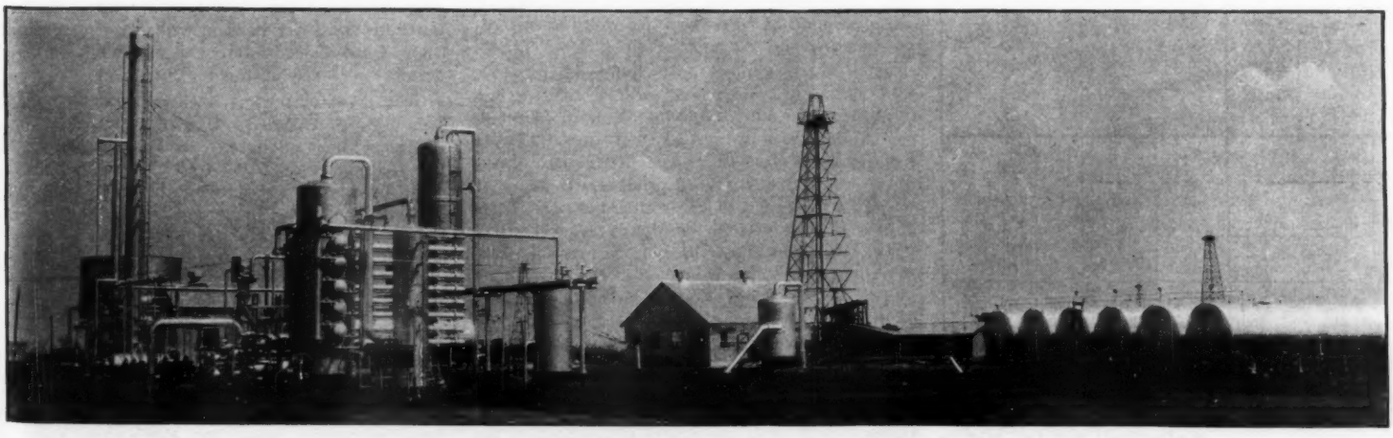
The Ritz-Canton field, one of the larger districts of western Kansas, covers some 17,330 acres and includes areas originally known as the Ritz, Canton, Decker, Garrett, Kaegi and Galva pools, connected by the drilling of intermediate wells. The field was opened in January, 1929, when McPherson Oil & Gas Development Co. completed No. 1 Wedel, C SW section 12-20-2w, as a 6,500,000-foot gas well in Chat at 2,983 feet, total depth. The first oil was found late in June, 1929.

The 267 wells in the Ritz-Canton field had daily average production of 5,125 bbls. of oil during the past week, ending December 27, 1937. It had total production of 28,568,540 bbls. of oil up to November 1, 1937—a remarkable record in view of the fact that nearly all of the wells produced water initially, offering one of the most difficult water disposal problems in the state. The field appeared completely defined, but drilling of inside locations and further Wilcox sand development promises considerable work for the future.

Much of the McPherson activity during 1938 will be in and around the Graber pool, a long, narrow field in the southeastern part of the county and extending south into Harvey County.

This pool was opened in May, 1934, at Continental Oil Co. and others No. 1 Graber, NE NW NW section 32-21-1w, in the south end of the pool. It had Hunton lime at 3,274 feet, total depth 3,298 feet, and produced 870 bbls. of 41-gravity oil naturally in 24 hours, and 1,294 bbls. after acid. Misener sand production was uncovered in the pool the past year at Derby Oil Co. and L. H. Wentz No. 8 Goering, SE SE NE section 17-21-1w, which produced 88 bbls. of oil at 3,360 feet, total depth. It is at the north edge of the pool.

Development at Graber has been on a trend extending from southwest to northeast, with productive area in excess of 880 acres. The field has not been defined, no dry holes having been drilled, although some small edge wells may tend to limit the area. However, it still is any man's guess as to where and how far the field eventual-

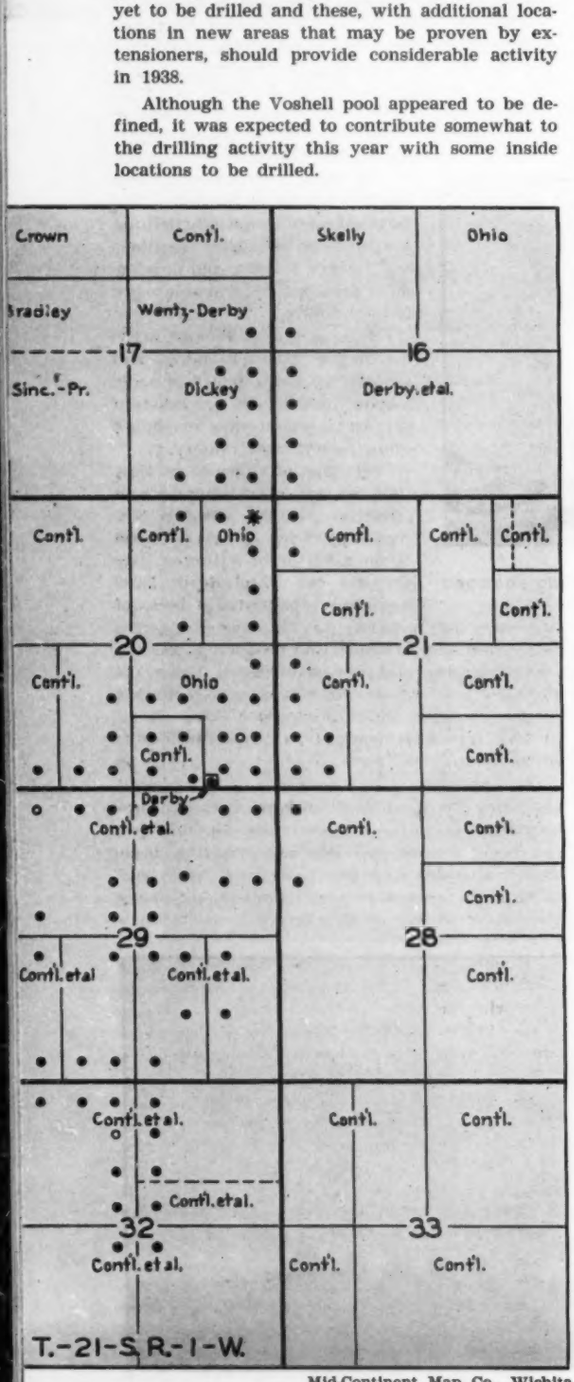


The Galva plant of Warren Petroleum Co., near McPherson, Kansas

McPherson refineries provide much of the market for that county's crude oil. This is the Globe refinery at McPherson

ly will extend. An orderly drilling program has been followed and development has been comparatively slow. There are many inside locations yet to be drilled and these, with additional locations in new areas that may be proven by extensioners, should provide considerable activity in 1938.

Although the Voshell pool appeared to be defined, it was expected to contribute somewhat to the drilling activity this year with some inside locations to be drilled.



Mid-Continent Map Co., Wichita

The Graber pool, McPherson County, Kansas

Considerable work is under way or proposed in pools near the town of McPherson, principally in the Chindberg and Johnson sectors.

Chindberg originally was opened as a gas pool at McPherson Oil & Gas Development Co. No. 1 Chindberg, C NW NW section 18-19-2w, which produced 5,000,000 feet of gas from Chat pay at 2,996-3,009 feet. It later was deepened to oil pay at 3,007 feet, total depth 3,045 feet, and produced 37-gravity oil, with no record of initial production. Kansas City lime production was uncovered in March, 1935, at Tom C. Johnson No. 1 Good, SE SE NW section 13-19-3w. It was drilled to 3,015 feet in Chat, plugged back to 2,363 feet and completed in Kansas City lime for initial production of 97 bbls. of oil naturally, and 227 bbls. after acidizing. With a productive area of more than 550 acres, numerous locations remain to be drilled.

McPHERSON COUNTY POOLS

Pool—	No. wells	Potential	Jan. net allowable
Bornholdt	1	127	1,388
N. Canton	1	282	874
Chindberg	19	1,294	11,917
Chindberg, K. C.	6	256	4,027
Graber, Misener	2	505	1,388
Graber, Chat	3	45	1,393
Graber, Hunton	90	56,182	91,779
Johnson	16	816	10,786
Ritz-Canton	254	11,852	161,471
Voshell	113	6,266	70,307
Total	505	77,625	355,330

These figures were taken from January proration report of the Kansas Corporation Commission.

Near McPherson City

The Johnson pool, also called the Door-Step pool because it is near the southeast edge of the town of McPherson, was opened in February, 1932, at Shell Petroleum Corp. and others No. 1 Johnson, SE SW SW section 35-19-3w. It had Chat at 2,984-3,019 feet, total depth 3,046 feet, with initial production of 600 bbls. of oil and 13,000,000 feet of gas. Gravity of the oil was 37 degrees. Although some failures have been recorded, it still was not entirely defined and some inside locations remain to be drilled in a productive area estimated to exceed 1,000 acres. The current production report listed 23 producing oil wells, in addition to several gas wells, with daily average flow of 382 bbls. of oil.

The North Canton pool, lying northeast of Ritz-Canton, was discovered in July, 1936, at Empire Oil & Refining Co. No. 1 Cunningham, SE cor. section 26-18-1w. It had Chat pay at 2,803-32 feet, total depth, with initial production of 825 bbls. of oil. It is the only producer in the pool, limited by failures to the south and east. Difficulties of completing the discovery well have discouraged development, but is probable that some more tests may be drilled in the area which still is undefined but thought to be small in productive extent.

Other older producing areas include the McPherson pool, on the trend northeast of Chindberg, and the McPherson County sector of the Hollow-Nikkel pool, which is largely in Harvey County. Both pools are practically delimited, but some locations remain to be drilled.

The first strike to be made on the western side of the county was recorded in October, 1937, when Bradley Brothers and others uncovered production at No. 1 Bornholdt, SW SW SE section 30-20-5w, east of the Welch pool in Rice County. It topped Chat, the producing horizon, at 3,292 feet, was bottomed at 3,335 feet, and completed for potential of 130 bbls. of oil after acidizing and shooting. No additional wells have been started, but, although the producing area is thought to be small, more tests are expected to be drilled. This strike, despite small production, has encouraged wildcatters seeking production in the western half of the county, a district that may yet see considerable exploration.

To Explore Trends

Within the next year or so there is likely to be considerable activity as operators seek to develop indicated trends, such as the one on the extreme eastern side of the county, including the North Canton pool, the old Wenger area and the Graber field in McPherson, with the Hesston and Halstead pools extending southward in Harvey County.

Three interesting wildcats are being drilled in the county. One is the Syndicate Oil & Gas Co., Boyle & Grossman and others No. 1 Diener, SE SE NE section 35-19-1w, 3 miles southeast of the town of Canton. It topped Chat at 2,905 feet, had a considerable showing of gas at 2,914-18 feet, and was drilling ahead at 3,099 feet at latest report. It is one-half mile north of the old Wenger pool which was opened in April, 1935, at Shell Petroleum Corp. No. 1 Wenger, NE cor. section 2-20-1w, with initial output of 109 bbls. of oil and 620 bbls. of water from Viola lime at 3,356-64 feet. It produced for a short period, was deepened to 3,470 feet in Simpson zone and abandoned.

A new producing area was opened the past week at Carter Oil Co. No. 1 Hoglund, C W half SW NW section 8-17-3w, near Lindsborg, in the northern part of the county. It had estimated natural production of 20 bbls. of oil, and was estimated good for 75 bbls. daily after acidization. Production was from Viola lime at around 3,352-78 feet. Some water was showing and operators were attempting to shut it off.

The third outpost is Archer & Crane's No. 1 Templin, NW SW SE section 32-17-3w, which has not gone deep enough to indicate anything. It was drilling below 2,160 feet in lime.

Regardless of the outcome of these tests and of extension wells in proven areas, McPherson County is due for much exploration and development in coming months. The western side of the county largely is undeveloped and has not had as intensive wildcat exploration as the east side. It has been fairly well geologized and numerous structures located, and these undoubtedly will be explored.

This wildcat exploration, with activity in the Graber, Ritz-Canton and other proven areas, will keep operators busy in McPherson County throughout 1938.

Wildcats Indicating Two New Fields in Coastal Louisiana

By NEIL WILLIAMS

HOUSTON, Tex., Jan. 10.—Continuation of active exploration on the Louisiana Gulf Coast is resulting in a large number of new fields. Two new fields were opened the past month, making a total of 14 for the year. Three others are in the making at wildcat tests showing oil and gas. Conclusive evidence of production also has been given in sands encountered by several other wildcats now drilling deeper for exploratory purposes.

At least two of the three wildcats are fairly certain to open new fields. These are Gulf Oil Corp. No. 3 State, Timbalier Bay Prospect, and Amerada Petroleum Corp. No. 1 South Coast Corp., Raceland Prospect, both in Lafourche Parish. Sands encountered in these tests, together with showings of drill stem tests and findings of electrical logging surveys, were such as to prove the existence of substantial production.

Gulf's wildcat on the Timbalier Bay Prospect is attempting to complete in a 6,900-7,000-foot sand. The hole originally was drilled to a total depth of 8,726 feet, where the bottom was in salt topped at 7,741 feet. For several weeks the hole has been used in connection with additional geophysical work the company has been doing in the area. With this completed and the bottom plugged back to approximately 7,000 feet, testing of the sands is being undertaken from the bottom up through perforation of casing. A succession of sands, in addition to the one now being tested, was passed up in drilling. Chief among these was a section at 6,749-6,846 feet.

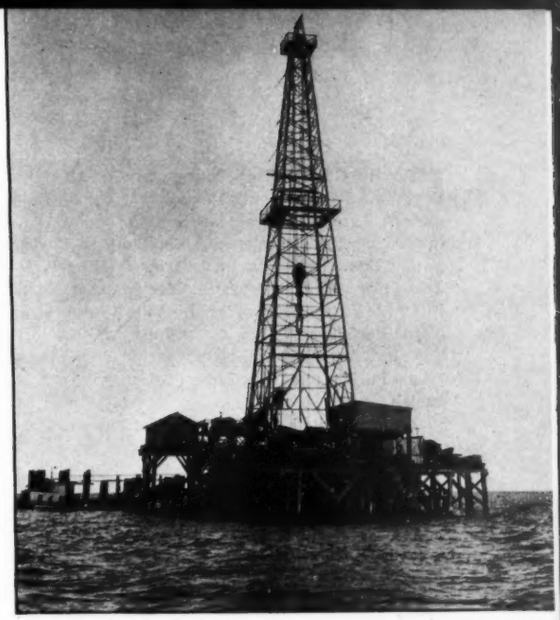
The Raceland wildcat has been standing over the holidays with 7-inch casing cemented at 9,003 feet. The total depth is 10,314 feet. This well topped oil sand at 10,182 feet, and cored sand at intervals to bottom. Plug now is being drilled and a string of 5-inch casing will be cemented on bottom. Another favorable sand section was cored from 7,239 to 7,279 feet. These will be tested in order from bottom up through perforated casing.

Location of the Timbalier Bay well is in the bay of the same name and within a few hundred feet of the Gulf of Mexico. Only a narrow sand bar separates it from the open gulf. The major portion of the field is believed to extend out into the gulf. The Raceland Prospect is from 3 to 4 miles east of the town of the same name, and about 30 miles southwest of New Orleans.

NEW FIELDS BY YEARS ON LOUISIANA COAST

Year*	Fields opened	Total fields
1937	14	63
1936	6	49
1935	5	43
1934	6	38
1933	0	32
1932	2	32
1931	5	30
1930	1	25
1929	8	24
1928	3	16
1927	3	13
1926	2	10
1924	1	8
1917	1	7
1912	2	6
1910	1	4
1902	2	3
1901	1	1

*No discoveries in years not listed.



Superior Oil Co. No. 1 State, located over a mile off shore of Cameron Parish in Gulf of Mexico

Gulf Oil Corp. No. 3 State, discovery well Timbalier Bay field, Lafourche Parish, Louisiana, in process of completion. In background is Gulf of Mexico

Woodlawn Prospect

On the Woodlawn Prospect, Jefferson Davis Parish, Union Sulphur Co. is attempting to make a well in its No. 1 Calcasieu National Bank. Drilled to 8,524 feet, where 7-inch casing is cemented, this well is testing various sands by perforation of casing at desired levels. Sands showing oil and gas were cored at intervals from 8,022 feet to bottom. The latest test, made through perforations at 8,292-95 feet, showed salt water, but with the completion of a squeeze job the casing will be perforated higher in the sand. Location of the test is about 5 miles northeast of the Iowa field.

Among the wildcats still drilling which have given indications of becoming pool openers is Superior Oil Co. No. 1 State, located in the Gulf of Mexico, a mile and a quarter off the shore of Cameron Parish. A sand showing oil, in which it is believed a good well could have been completed, was cored in this test at 5,110-80 feet. Being carried deeper for exploratory purposes, the test now is drilling below 7,700 feet. A string of 7⅝-inch casing was cemented at 7,166 feet.

Existence of another field has been indicated recently by Gulf Oil Corp. No. 1 Broussard, located southeast of Jennings, Acadia Parish, which tried to blow out from a sand encountered below 9,600 feet. With pressure successfully killed, a string of 7 inch casing has been cemented at 9,672 feet. Plans call for drilling deeper.

Opening of a field on the North Starks Prospect, northern Calcasieu Parish, has received a setback with the failure of D. &D. Oil Co. to complete a well in No. 2 Lutcher-Moore. Sand showing oil was encountered in this well, but after a series of tests which resulted in salt water, the well has been abandoned. The hole was drilled to 9,674 feet, and then plugged back to 8,579 feet for a test through perforations in the casing at 8,550-60 feet. The hole then was plugged to 8,400 feet, where salt water again was tested with some gas. A previous test drilled on the prospect also experienced high gas pressures and tried to blow out.

1937 Discoveries

New fields opened during 1937 more than doubled the number of discoveries of any previous year, except 1929, when eight new fields were discovered. Discoveries by years are shown in an accompanying tabulation.

In order of their discovery, fields opened in

1937 were Gibson, Terrebonne Parish; Abbeville, Vermilion Parish; South Roanoke, Jefferson Davis Parish; Lirette, Terrebonne Parish; Lake Long, Lafourche Parish; Venice, Plaquemines Parish; Bayou Des Allemonds, St. Charles Parish; Bayou Sale (Horseshoe Bayou), St. Mary Parish; South Elton, Jefferson Davis Parish; Ville Platte, Evangeline Parish; Potash, Plaquemines Parish; North Crowley, Acadia Parish; Quarantine Bay, Plaquemines Parish, and Wax Lake (Bateman), St. Mary Parish.

Due to limited development, the importance of most of these fields as potential reserves cannot be determined. The most important development which has taken place so far has been at Gibson, where five wells have been drilled. At Abbeville, Venice and North Crowley two wells each have been completed, while in the remainder of the fields only one well each has been brought in. However, judging from records of the present wells, and indications of geophysical pictures, the majority of these fields are expected to prove important reserves.

Wells at Gibson, Venice and Bayou Sale have given indication of prolific production. At Gibson and Venice, wells so far completed have been good for as much as 1,000 bbls. daily, each with the flow pinched through small chokes. In both fields production of these wells has been unusually consistent. With five wells, Gibson, opened last February, now has a daily restricted production of more than 3,000 bbls. daily, while Venice, a July discovery, with two wells is making nearly 1,500 bbls. under the same conditions. The discovery well at Bayou Sale, completed last August, flowed at the rate of around 800 bbls. daily for a long period, although recently the flow has been restricted to between 400 and 500 bbls. daily.

Consistent production also has been indicated in completions to date at North Crowley, Bayou Des Allemonds and Lake Long. Quarantine Bay and Wax Lake, the most recently opened fields, are believed to be of importance, although the discovery wells have not been in long enough to prove their consistency. In several of the fields, the wells have produced only distillate and gas, but some of the Gulf Coast's best fields, among them Conroe, have been opened by distillate wells. Potash, a proved shallow salt dome, has made the poorest showing. There, the discovery, is a small shallow pumper. A number of other shallow tests have been drilled without success. These were put down mainly as sulfur tests.

Wax Lake field has been opened only within the past two weeks. The discovery well, Texas Co. No. 1 State, about 4 miles southwest of Morgan City, St. Mary Parish, is producing through casing perforations at 10,900-05 feet, and at present is the deepest producing well on the Gulf Coast. It flowed initially at the rate of 350 bbls. daily through small chokes. A total depth of 11,879 feet was reached at one time in this test, which has been drilling since last February, but due to mechanical and formation trouble, the hole has been plugged to its present level.

Prior to completion of this well, the deepest production record was held by Texas Co. No. 1 Horseshoe Bayou at Bayou Sale, which has been producing at a depth of 10,863-73 feet. Lirette, another 1937 discovery, held the record, not only for the Gulf Coast but also for the entire world, for a short time following its completion last May at 11,615 feet. Since, this well has been plugged back to 10,520 feet, where it is producing a small amount of light oil.

Significant is the fact that three of these new fields, Lirette, Bayou Sale and Wax Lake are producing from depths below 10,000 feet. This reflects the trend toward deeper development which has been going on along the Gulf Coast. Also, discovery wells of four of these fields were drilled to depths below 11,000 feet, three going below 12,000 feet. Lirette's discovery well, drilled by Humble Oil & Refining Co., drilled to 12,165 feet. Continental Oil Co. drilled its discovery well (now producing from a shallow sand) at Abbeville to a depth of 12,216 feet. Texas Co.'s Bayou Sale well went to 12,261 feet, while the Wax Lake well reached 11,879 feet.

Discoveries during 1937, not including those areas now being tested, boost the total number of fields found on the Louisiana Gulf Coast to 63. Of these, all but two still are on the productive list. The two fields no longer productive are Bayou Bouillion and Pine Prairie but it is possible that additional production will be opened in these fields.

Most of these fields have been opened within comparatively recent years. Ten years ago there were only 13 fields in the district. Since then 50 fields have been added to the list, and of these 31 have been brought in during the past four years. With the start which is being made, and no cessation of wildcatting in sight now, the list of fields is expected to be materially increased during 1938.

New fields being opened, however, are all owned and operated by single, or groups of companies jointly, and no active drilling plays are expected. Development in each of these is being carried out on a consistent and orderly basis. Thus, although these fields add substantially to the known reserves of the district, development will not result in any immediate large flush production.

NEW FIELDS OPENED IN 1937 IN COASTAL LOUISIANA

Field—	Parish	Company	Discovery well	Month opened	Disc. well total depth (ft.)	Present prod. depth (ft.)	No. wells	Daily prod. (bbls.)*
Gibson	Terrebonne	Shell Pet. Corp.	1-B Realty	February	9,493	9,493	5	3,014
Abbeville	Vermilion	Continental Oil Co.	1 Hebert	March	12,216	7,675	2	192
South Roanoke	Jeff Davis	Shell Pet. Corp.	1 Sturdivant	April	9,749	8,558	1	75
Lirette	Terrebonne	Humble Oil & Ref. Co.	1 Ellender	May	12,165	10,520	1	16
Lake Long	Lafourche	Fohs Oil Co.	1 Lake Long	June	9,406	9,373	1	314
Venice	Plaquemines	Tide Water Oil Co.	3 Manhattan	July	7,208	7,208	2	1,435
Bayou Des Allemonds	St. Charles	Amerada Pet. Corp.	1 State	July	8,706	6,830	1	141
Bayou Sale	St. Mary	Texas Co.	1 Bayou Sale	August	12,261	10,873	1	455
South Elton	Jeff Davis	Stanolind Oil & Gas Co.	2-B Calcasieu	August	9,851	8,965	1	30
Ville Platte	Evangeline	Continental Oil Co.	1 Tate	September	9,098	9,035	1	100
Potash	Plaquemines	Humble Oil & Ref. Co.	11 Orleans Levee	September	696	696	1	Shut in
North Crowley	Acadia	Humble Oil & Ref. Co.	1 Fed. Ld. Bank	September	9,339	8,102	2	430
Quarantine Bay	Plaquemines	Gulf Oil Corp.	3 State	November	8,204	8,177	1	Shut in
Wax Lake	St. Mary	Texas Co.	1 Bateman	December	11,879	10,905	1	.....

*Daily average production week ended December 23.

TRENDS IN REFINERY DESIGN

(Continued from Page 21)

mately 3,200 bbls. of high octane polymer gasoline daily. Kellogg.

The Tide Water Associated Oil Co., Avon, Calif. Thermal polymerization plant and hydrogen sulfide recovery unit. Alco.

Gulf Oil Corp. at Port Arthur, Texas. 22,000 bbl. per day combination selective cracking unit. Lummus.

Standard Oil Co. of Indiana, Whiting, Ind. Combination unit will handle 22,000 bbls. daily of Mid-Continent crude to produce high octane gasoline, fuel oil and coke and will alternatively produce other specification distillate stocks. Kellogg.

Hydro Engineering & Chemical Co. Baton Rouge, La. Gas pyrolysis and ethylene recovery plant. Alco.

Panhandle Refining Co. Lueders, Texas. Combination topping and cracking unit of 1,000 bbl. capacity operated under U.O.P. license. Mase Engineering Co.

General Petroleum Corp. of California, Torrance, Calif. Combination selective cracking unit, 14,000 bbl. daily. Lummus.

Anglo-Iranian Oil Co. Ltd. Iso-pentane plant at Abadan, Iran (Persia). Alco.

Gulf Oil Corp. at Port Arthur, Texas. One 10,000 bbl. per day copper sweetening unit. Lummus.

The Texas Co. Port Neches, Tex. 16,500-bbl. per day two-stage distillation unit. Alco.

Barnsdall Refining Corp. Corpus Christi, Tex. New refinery consisting of 5,500 bbl. Dubbs cracking unit operating with low gravity crude oil. Frick-Reid.

Continental Oil Co. Artesia, New Mex. Small cracking plant charges 750 bbl. per stream day Artesia reduced crude, making a high octane gasoline and low viscosity fuel oil. Kellogg.

Anglo-Mexican Petroleum Corp. Tampico, Mexico Two large naphtha reforming furnaces. Foster Wheeler

Pure Oil Co. Toledo, O. Thermal pyrolysis polymerization plant. Alco.

Gulf Oil Corp. Port Arthur, Texas. A polymer hydrogenation plant under the Hydro patents. Lummus.

Lago Oil & Transport Co. Aruba, D.W.I. Aviation gasoline, deethanizing and rerun units. Butane and polymerization plant preparation equipment. A second plant for butane and polymerization plant preparation equipment. Hydrogenation-stabilization unit and treating plant. Foster Wheeler.

Valvoline Oil Co. Butler, Pa. 660-bbl. per day filtrol treating unit. This unit operates on Pennsylvania long residuum. Alco.

Barnsdall Refining Corp. Barnsdall, Okla. A 2,000 bbl. cold oil Cross unit, originally built in 1925 has been revamped to handle a charge of gas oil and reduced crude. Kellogg.

Gulf Oil Corp. Port Arthur, Texas. 12,000 bbls. per day treated, cracked gasoline rerun unit. Foster Wheeler.

Gulf Oil Corp. Port Arthur, Texas. A U.O.P. polymerization plant. Lummus.

Anglo-Iranian Oil Co. Ltd. Abadan, Iran. 25,000 bbl. daily pressure distillate debutanizer. Alco.

Trinidad Leaseholds, Ltd. Trinidad, B.W.I. Solvent treating lubricating oil plant and furfural process. Foster Wheeler.

Kendall Refining Co. Bradford, Pa. Deasphalting and dewaxing plant. This plant charges 1,100 bbls. per day of cylinder stock from Bradford crude, and alternatively 1,160 bbls. per day of distillate stock from the same crude, and is operated to produce a zero pour dewaxed oil. Kellogg.

Anglo-Iranian Oil Co. Ltd. Abadan, Iran. Gas Pyrolysis unit. Alco.

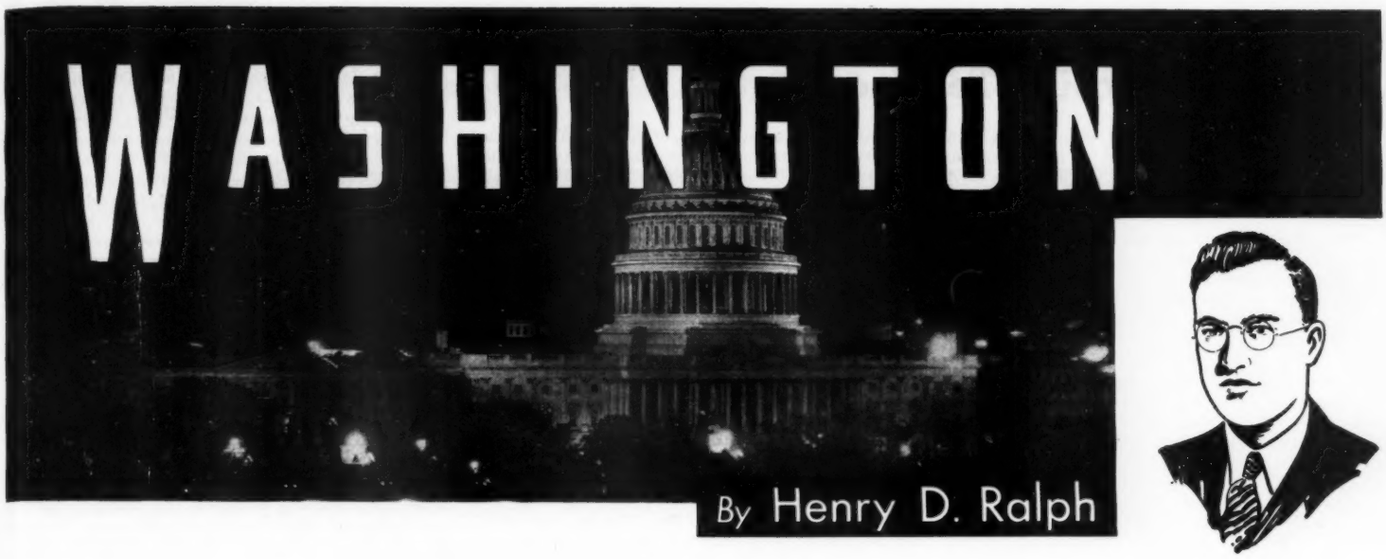
Azienda Nazionale Idrogenazione Combustibili (A. N. I. C.), Bari, Italy. Stabilization plant. Foster Wheeler.

Standard Oil Co. of Ohio, Toledo, Ohio. A combination topping and cracking unit with stabilizer, handling 14,600 bbls. per stream day of Mid-Continent or Crystal, Mich. crudes. The products are gasoline of varying octanes and distillation ranges, kerosene, virgin furnace oil, paraffin distillate, and fuel oil. Kellogg.

Pure Oil Co. Heath, Ohio. An 8,000 bbl. daily combination selective cracking unit. Lummus.

4,000-bbl. per day combination cracking unit and recovery stabilization plant at Kawasaki refinery, Japan, for the Associated Oil Co. (Mitsubishi). Alco.

One 3,300 bbl. per day furfural refining unit for the Shell Oil Co. of California, Martinez, Calif., Lummus.



By Henry D. Ralph

Planned Production Urged by President

WASHINGTON, Jan. 10.—President Roosevelt at a press conference last week, suggested that all members of an industry should get together with government officials to map out total prospects for consumption in order to plan their production, price, and employment schedules and in this way minimize booms and slumps. He added, however, that there should be no price-fixing or allocation of production among competitors as a result of such conferences.

Observers immediately raised the point that conferences of this nature would come dangerously near to violating the antitrust laws even if they did not result in price-fixing or allocation of markets, and that without some allocation among producers and means of enforcing it a total production estimate for an industry would have slight practical effect in most lines of business. On the other hand, if the antitrust laws are to be lifted to permit competing producers to work out production schedules the result may be very similar to the old NRA codes, although President Roosevelt has warned against predictions that the NRA is to be revived.

A somewhat similar goal has been suggested by Assistant Attorney General Jackson who recently stated that the objective of both government and business should be to achieve a high volume, low price economy which will sustain a higher wage scale and a higher standard of living.

Oil Industry Example

Perhaps the oil industry is a good example of what both the president and Mr. Jackson have in mind, for it has maintained high volume, a high wage scale, and low prices, and at present its total production is pretty well determined by monthly forecasts of gasoline consumption issued by the Bureau of Mines. In this case the forecasting is done by a government agency and production is allocated by the state governments in the principal oil producing regions. After all the charges of monopolistic practices which have been hurled against the oil industry for a generation, it would be ironical if its present plan of operation were adopted by the federal government as a pattern for all industry to follow.

Although business men are much in the dark regarding the administration's objectives, the president's suggestion for avoiding overproduction has been welcomed by a number of leading business executives. Among these is Charles F. Roeser of Fort Worth, Texas, president of the Independent Petroleum Association of America, who telegraphed to the president his congratulations upon this proposal.

A number of suggestions have been made at the capitol for congressional investigations of monopolistic practices and allied business problems, and President Roosevelt is preparing a special message on the subject which will probably be sent to congress early in February. The general opinion, however, is that the problem is so complex and controversial that no legislation will be enacted during the present session.

Oil Depletion

Revision of the oil depletion allowance in the income tax law will not be considered at this time, it has been announced by Representative Fred Vinson of Kentucky, chairman of the subcommittee of the house ways and means committee engaged in revising the revenue laws. It is possible, though not probable, depletion may come up during consideration of the bill by the full committee, or a special subcommittee may be appointed to study depletion allowances later in the session after the general tax revision bill is through the house.

Budget

The budget submitted to congress by President Roosevelt forecasts a continuing federal deficit, estimated at $950,000,000 for the fiscal year 1939, in spite of an estimated reduction of $539,000,000 in expenditures. The reduced expenditures are due chiefly to smaller estimates for federal aid for highways and lower appropriations for river and harbor improvement, reclamation projects, general federal public buildings, and for relief.

The budget estimates the federal excise tax on gasoline will bring in $201,000,000 during the fiscal year ending June 30, 1939, compared with $206,000,000 during the current fiscal year and actual tax receipts of $196,532,813 during 1937 fiscal year. A year ago the budget estimated the gasoline tax would yield $204,000,000 during the 1938 fiscal year. The lubricating oil tax is estimated to yield $30,200,000 in 1939, compared with the present estimate of $31,400,000 for 1938 and actual collections of $31,463,002 in the 1937 fiscal year. A year ago it was estimated the lubricating oil tax would yield $33,300,000 during the 1938 fiscal year. This reveals the curious fact that the gasoline tax is estimated to yield $2,000,000 this year more than estimated a year ago while the lubricating oils tax has been revised downward by approximately the same amount.

Oil Taxation

The tax on transportation of oil by pipe line is estimated to yield $10,300,000 in 1939 against $10,500,000 for the current fiscal year and actual collections in the 1937 fiscal year of $11,244,095. The processing tax on crude petroleum is estimated to yield $860,000 in 1939 and $870,000 in 1938 against 1937 collections of $894,182. This tax was imposed as an aid in controlling shipment of "hot" oil under the Connally act, and there is a possibility it may be repealed in the course of revision of the tax laws now under way by the house committee on ways and means, on the ground it is no longer needed as a regulatory measure and its yield is too small to justify the work of collecting it.

The petroleum conservation division of the department of the interior will continue to receive $285,000 for enforcement of the Connally act. No important changes are made in the estimates for the Bureau of Mines, and among other appropriations it will receive $250,400 for testing fuels, $260,000 for oil and gas investigations, and $312,000 for economics of mineral industries.

Competitive Fuels Study

A study of the competition between bituminous coal and other fuels has been started by the Bituminous Coal Commission as required by the Guffey coal act. The study is under the direction of Commissioner C. E. Smith of West Virginia and Percy Tetlow of Ohio and will follow a plan being prepared by Dr. F. G. Tryon, chief of the marketing statistics division of the commission and long identified with the coal economics section of the Bureau of Mines.

Montana Hearing on Proration Develops Opposing Testimony

GREAT FALLS, Mont., Jan. 8.—Pros and cons of a proposal to prorate production in north Montana oil fields were heard this week when the Montana Oil Conservation Board reconvened a hearing begun in December.

Somewhat tempering urgency of the hearing were reports of a marketing situation which had improved considerably during the month, due to prospective reductions in the freight rate on crude oil and to pending construction of additional refineries.

The hearing was marked by introduction of evidence relative to water intrusion in the Kevin-Sunburst field, including a field survey prepared by R. P. Jackson, secretary of the board, and a map prepared by E. B. Emrick, Conrad geologist.

Evidence designed to prove the Cut Bank field is hampered by a similar inadequate market for crude, and that the condition has resulted in the shutdown of many wells, was next introduced.

Called for the prorationists, John E. Blixt of Cut Bank, petroleum engineer for Texas Co., testified concerning a report on field conditions made by him as of November 1, 1937. His figures showed the field to have a daily potential of 11,515 bbls. and an average sales outlet of 6,786 bbls., during the month covered.

George Hutchins, of the Annand-Hutchins Cut Bank Syndicate, testified his firm has three wells with a daily potential of 105 bbls. During October, he declared, his concern was able to sell only 309 bbls., with wells shut in when storage was filled. Mr. Hutchins told the board his syndicate had sold 100 per cent of its production to Toronto Pipeline Co. prior to October. Entire market of the concern, he testified, was lost when the Toronto concern ceased buying in Montana.

Unless proration is adopted and an equitable market thereby provided for all northern Montana producers, a general move to equip leases with topping plants may follow, with producers distilling their own crude and seeking markets wherever available, Mr. Hutchins declared. He asserted about 80 wells are now shut down in the Cut Bank field.

Similar views were expressed by F. H. Keup and J. G. Day, Cut Bank field producers. Mr. Day urged the board to study proration plans in effect in other states, with a view to putting the most workable plan in effect in this state.

Opening for those opposed to proration was the testimony of Dan M. Drumheller of Cut Bank and Joseph Drumheller of Spokane, both officials of companies operating in the Cut Bank field. Proration, both declared, would nullify efforts to obtain additional refinery facilities and through them new market outlets.

L. P. Donovan of Shelby, attorney for the anti-proration group, introduced records of the state board of equalization, showing the production of crude oil and of manufactured gasoline in Montana, starting in 1921, when the state's first field was brought in.

His figures showed a 1921 output of slightly more than 1,000,000 bbls., increasing to approximately 7,500,000 barrels in 1926 and declining steadily to around 2,500,000 bbls. in 1932. The output for the first nine months of 1937, largely due to production of the Cut Bank field, was in excess of 4,000,000 bbls., he said. His figures showed about half of the approximately 90,000,000 gallons of gasoline sold in Montana in the first nine months of 1937 were shipped in by out-of-state refiners.

Two letters were read by Secretary Jackson, relative to new Montana crude markets. One, from Wilkinson & Potter, Butte, operating in the Cut Bank field, said they had recently contracted to sell their output to a refinery being constructed at Pocatello, Idaho. The other, from L. C. Wrather of Spokane, Wash., said promised reductions in freight rates on crude from Montana might result in opening of a refinery outlet at Spokane.

Proration was opposed by George Nadeau, Cut Bank producer and pipe line operator, who declared individual and cooperative effort in enlarging market outlets is the solution for the problems of northern Montana producers.

He reviewed the history of himself and associates in finding a market for their crude and expressed opinion that many of those sponsoring the proration plan would benefit more by intensive efforts to open new markets, than by operation of a curtailment program. He said that early in December his interests contracted for sale of about 2,000 bbls. of crude daily from 27 wells. His testimony marked conclusion of the hearing until Monday. L. B. O'Neil, chairman of the Oil Conservation Board, presided.

Leading some operators to conclude that spring will find no north Montana producer willing to prorate his output, crude purchase contracts were circulated during the week in the Kevin-Sunburst, Cut Bank and Pondera fields, with James W. Johnson of Shelby as contracting agent. The contracts provide producers shall share in the refined oil market in accepting a price based upon the net-back of the refinery. It has been reported that if a sufficient supply of crude can be contracted, a 5,000-bbl. plant will be built by those whom Mr. Johnson represents. Verification of plans could not be obtained from Mr. Johnson or others working with him on the contracts.

Plans for construction of a plant at Pocatello, Idaho, with a capacity of around 1,000 bbls. daily, were also reported. According to the report, the plant will be built by Wasatch Oil & Refining Co., a Salt Lake City concern. Montana producers reported to have signed contracts with this plant include Wilkinson & Potter, K. D. Pardee, C. P. Castle, and Crumley, Aronson & Frary. The price offered is said to be based on the Mid-Continent scale for crude of equal gravity. The contracts are reported to provide for delivery of from 800 to 1,200 bbls. daily.

It was recently announced the Great Northern and Northern Pacific railways had granted a joint rate of 31 cents per 100 on crude from north Montana to Pocatello, and negotiations for a much lower rate are under way.

New Kansas Exhibit Building At International Exposition

Kansas will join Oklahoma, California and Texas as one of the oil producing states to be honored by the International Petroleum Exposition, May 14 to 21, by having a permanent exhibit building in Tulsa in its honor.

The Kansas building, most recent addition to the exposition grounds, will be constructed on the northeast corner of the oil show plant. The $10,000 building will contain 55 booths, 10 feet square, and will have a total of 12,800 square feet exhibit space. It will be 120 feet long and 200 feet wide.

This building will increase the number of new permanent exhibit buildings under construction at the exposition grounds, to take care of the demand for space, to three. This construction program was necessitated by the fact that 60 per cent more space has already been sold than was taken for the entire 1936 oil show.

Committee on Aeronautics Continues Fuel Research

Continuing research into high octane fuels and new lubricants for aircraft engines is under way by the National Advisory Committee for Aeronautics, it is disclosed by the annual report of that organization. The recent demand of aircraft designers for engines of increased power output has been fulfilled by the supplying of radial air-cooled engines developing 1,500 horsepower during takeoffs, and the committee's investigations indicate air-cooled engines of even greater power will be satisfactory. The greater percentage of the recent increase in power of aircraft engines is attributed to the use of fuels having increased antidetonating qualities.

The committee is now conducting investigations to determine the maximum engine performance with fuels having octane numbers ranging from 87 to somewhat greater than 100. The desired octane number of the fuel has been obtained by using commercial isooctane blended with a gasoline having an octane number of 18. For octane numbers greater than 100, tetraethyl lead has been added to the isooctane. Tests have been completed with fuels of 87, 91, 95 and 100 octane number.

In addition, tests are almost completed on the isooctane with one cubic centimeter of tetraethyl lead. The limiting performance of these fuels has been determined at maximum power and at best fuel economy for both incipient and audible knock. The results show that as the inlet-air temperature is increased for any one compression ratio the effectiveness of the fuel of higher octane number appreciably decreases. Only at the lower inlet-air temperatures are the greatest increases in performance realized for the fuels of higher octane number. The tests have shown that the power of the engines does not vary as the inverse square root of the inlet-air temperatures, but as an approximately lineal function.

The NACA also has under way several tests of aircraft engine lubricating oils including tests on the stability of lubricants, use of compounded oils, the effect of oil acidity on bearing erosion, and the wear and oiliness characteristics of various aviation engine lubricating oils. New equipment or methods have been devised for practically all of these lubricating tests, and results are not yet ready for announcement. The committee is also continuing its studies of the use of a fuel injection system instead of the conventional carburetor, two-cycle engines, diesel engines, and large liquid-cooled motors for aircraft.

Interstate Oil Compact Commission To Confer with I.P.A.A. Officials

Inviting oil men to attend the meeting of the Interstate Oil Compact Commission at the Biltmore Hotel, Oklahoma City, at 10 a.m., January 17, Chairman E. O. Thompson said:

"We are looking forward to this being one of the most important meetings that has been held by the Interstate Oil Compact Commission. We have been notified by the officials of the Independent Petroleum Association of America that they will hold a meeting of their executive committee at the same hotel on the same date, which will give us opportunity to talk over and discuss the oil situation in general, and especially such conservation steps that will be necessary to take in order to conserve oil and gas during the coming winter months."

Barnsdall Oil Co. Buys Greta Oil Corp. Properties

Barnsdall Oil Co. has bought Greta Oil Corp. of Houston for $2,250,000. Properties acquired include 1,000 acres of producing leases in Greta and Saxet fields, 30 wells with daily allowable of 1,500 bbls., 20 proven but undrilled locations and unproven leases in Texas and Louisiana.

THE MARKETS*

CRUDE OIL: *In the Buckeye field and in the fields of the Midland district, Michigan, a cut of 15 cents was posted. In the Cat Creek field, Montana, prices were reduced 10 cents.*

REFINERY: *Mild weather has weakened the position of light heating oils in the East, but they continue strong in the Mid-Continent territory. Concern over rising stocks of gasoline continues to depress that division of the market.*

TANK-WAGON AND POSTED DEALER: *Standard Oil Co. (Indiana) reduced dealer gasoline 1 cent in St. Joseph, Mo., and tank-wagon kerosene 2 cents in Des Moines, Iowa. Socony-Vacuum reduced dealer gasoline 1 cent in Buffalo, N. Y., and announced fractional reductions at scattered New England points; reduced tank-wagon kerosene a quarter-cent in metropolitan New York and a half-cent in Syracuse, Manchester and Boston.*

FINANCIAL: *Oil shares responded readily to any signs of market strength and closed near their highs. Average of 30 stocks for week ending January 8: High, 30.15; low, 27.38; close, 29.89. Week ending December 31: High, 28.50; low, 26.41; close, 27.42.*

**Detailed information in market section.*

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

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Not Far Enough

President Roosevelt's remarks before the press conference last week favoring production control by industry may be encouraging, but need elucidation before they are of value in the situation confronting the oil industry.

It is becoming more apparent daily that the establishment of the Interstate Oil Compact and the conservation laws and regulations of the oil-producing states are not sufficient to assure continued healthy conditions in all branches of the industry.

The federal government approved the compact between the states based upon the conservation of an irreplaceable natural resource. Production of crude oil in excess of requirements has been condemned as a violation of the conservation principle and its acceptance in interstate commerce prohibited by the Connally act.

This is excellent, as far as it goes. It has aided materially in maintaining a fair degree of stability within the producing branch of the oil industry operations. But it does not cover the entire needs of the oil business.

The manufacturing branch of the industry should also be permitted to discuss its problems of supply and demand with a view to voluntary control. Its problems are as complicated as those of the oil producers and their solution is as necessary to the carrying out of the conservation program of the government and its desire to stabilize industry.

There are several angles to this situation always foremost in the minds of those connected with refining operations. There is the seasonal variation in the actual consumption of petroleum products. The daily gasoline demand in August is twice what it is in February. Consumption of burner oil is several times greater in winter than in the summer. In fall and spring the demand for kerosene is heavy. Outlets for burning fuels vary with the ups and downs of industrial activity.

During the past two years the matter of taking care of the rapidly increasing demand for burning oils and diesel fuel without accumulating excess supplies of gasoline during the winter months has become extremely important. Failure to find a proper solution of this problem which could be obtained by common study has been accountable for present heavy gasoline stocks with the threat they will become more excessive within 90 days.

These are some of the things refiners should be permitted to sit down, discuss and work out. Manufacturers, however, cannot do this until they understand clearly just what the government position is. Until they are permitted to do so the objective of the government, conservation and stabilization, cannot be accomplished.

Conservation of oil cannot stop with the raw material; there can be waste in excess manufacture and utilization as well as in the production of crude. The stability attained in one branch can be upset by the instability in the other. This is the crux of the existing situation.

The immediate problem is to prevent excess accumulation of gasoline in the process of supplying the requirements for burning oils. Gasoline is still the principal product of petroleum.

It is conceivable that an effective solution might include providing outlets for smaller operators who do not have the manufacturing or storage facilities needed.

With more than 200 independent operating refineries and thousands of marketing units neither the government nor the public need fear the interest of the consumer will not be fully protected which, after all, is the main objective of all antitrust legislation.

But before anything constructive can be accomplished there will have to be something more than flowery generalities and promises which, when it comes down to specific cases, may be interpreted altogether differently.

Preliminary Program for A. I. M. E. Petroleum Division Sessions

The American Institute of Mining and Metallurgical Engineers has prepared a preliminary announcement for its one-hundred forty-eighth meeting in New York, February 14 to 17. The program for the petroleum division follows:

PETROLEUM DIVISION

Tuesday Morning

Production Engineering

Abnormal Pressures and Pressure Variations with Depth of Petroleum Reservoirs.

Filtration of Drilling Mud.

Review of Recent Developments in Surface Chemistry and Relation to Oil Recovery Problems.

Discussion of Well Spacing in a Foreign Field.

Tuesday Afternoon

(Joint session with Mineral Industry Education Division, Committee on Geophysical Methods of Exploration, and Committee on Mining Geology.)

Round Table on Geophysical Education.

Symposium on Oil Production

Wednesday Morning

Domestic

Arkansas and North Louisiana, by H. K. Shearer, geologist, the Hunter Co., Inc., and W. B. Weeks, Phillips Petroleum Co.

California, by V. H. Wilhelm, chief petroleum engineer, Texas Co. (California).

Colorado, by C. E. Shoenfelt, geologist, Petroleum Information, Inc.

Illinois, by Alfred H. Bell, geologist and head of the Oil and Gas Division, Illinois Geological Survey.

Indiana, by M. M. Fidlar, State Gas Supervisor.

Kansas, by W. A. ver Wiebe, University of Wichita, and E. G. Dahlgren, director, Conservation Division of Kansas.

Kentucky, by Coleman D. Hunter, geologist, Kentucky West Virginia Gas Co., and Iley Browning and Nicholas W. Shiarella, geologists and operators.

South Louisiana, by Benjamin C. Craft, associate professor, Petroleum Engineering, Louisiana State University.

Michigan, by Theron Wasson, chief geologist, Pure Oil Co.

Mississippi, by Henry N. Toler, State Oil and Gas Supervisor.

Missouri, by Frank C. Greene, geologist, Missouri Geological Survey.

Montana, by Eugene S. Perry, chief geologist, Montana Bureau of Mines and Geology.

New Mexico, by E. H. Wells, State Geologist, and A. Andreas, geologist, New Mexico Bureau of Mines and Mineral Resources.

New York, by D. H. Newland, State Geologist.

Ohio, by Dewitt T. Ring, geologist, Ohio Fuel Gas Co.

Oklahoma, by H. E. Rorschach, consulting engineer.

Pennsylvania, North and Central.

Pennsylvania, South, by John T. Galey, operator.

Tennessee, by Kendall E. Born, assistant geologist, Tennessee Division of Geology.

Texas, Central, by Joseph M. Dawson, geologist, Gulf Oil Corp.

Texas, East, by Wallace Ralston, geologist, Sun Oil Co.

Texas, Gulf Coast, by W. V. Vietti, production superintendent, chief petroleum engineer, and E. P. Hayes, petroleum engineer, Texas Co.

Texas, North, by H. B. Fuqua, chief geologist, and B. E. Thompson, Gulf Oil Corp.

Texas, North Central, by H. W. Imholtz, consulting geologist.

Texas, Panhandle, by Henry Rogatz, consulting geologist.

Texas, Southwest, by M. T. Halbouty, chief geologist and petroleum engineer, Merit Oil Corp.

Texas, West, by P. P. Gregory, chairman, Yates Pool Engineering Committee, and B. B. Zavoico and J. H. Crump, geologist and assistant petroleum engineers, Department of Petroleum Economics, Chase National Bank.

West Virginia, by David B. Reger, consulting geologist.

Wyoming, by E. W. Krampert, consulting engineer.

Foreign

Russia, by B. B. Zavoico, geologist, Department of Petroleum Economics, Chase National Bank.

Venezuela.

Iran, by W. D. Brown, courtesy of Anglo-Iranian Oil Co.

Rumania.

Mexico, by V. R. Garfias and R. V. Whitsell, of the Cities Service Co.

Iraq, by B. B. Cox, Socony-Vacuum Oil Co., Inc.

Colombia, by O. C. Wheeler, chief geologist, International Petroleum Co., Ltd.

Argentina, by Mario L. Villa, Yacimientos Petroliferos Fiscales.

Dutch East Indies, by B. H. Van der Linden, N. V. de Bataafsche Petroleum Maatschappij.

India, by Geological Survey of India.

Bahrein Island, by J. O. Nomland, assistant chief geologist, Standard Oil Co. of California.

Canada, by Geological Survey of Canada.

France, by H. de Cizancourt, Compagnie Francaise des Petroles.

Germany, by Walter Kauenhowen, Deutsche Vacuum Oel A.G.

Poland, by Charles Bohdanowicz, professor, Economic Geology, Warsaw.

Trinidad, by Department of Mines.

Burma, by L. Dudley Stamp, London School of Economics and Political Science.

England, by C. A. P. Southwell.

Thursday Morning

Economics

What Are the Economic Uses of Petroleum? by John Gill and E. T. Knight, Atlantic Refining Co.

An Equilibrium Theory of Proration, by Joseph E. Pogue, vice president, Chase National Bank.

The Market for Oil Shares in 1937, by Norman D. FitzGerald, Department of Petroleum Economics, Chase National Bank.

Administrative Problems in the Control of Economic Domains, by Alexander Sachs, economist.

Thursday Evening

Annual dinner of the division.

Scientific and Technical Committee for Exposition

Dr. Gustav Egloff, chairman, has appointed the following members of the Scientific and Technical Committee of the Tenth International Oil Exposition, at Tulsa, May 14-21:

Dr. C. K. Francis, The Oil and Gas Journal, vice chairman; Sidney Born, University of Tulsa; Donald C. Barton, Houston, Texas; L. G. E. Bignell, The Oil and Gas Journal; H. W. Camp, Cities Service Oil Co., Tulsa; Frank R. Clark, Ohio Oil Co., Tulsa; R. E. Day, Magneto Ignition Co., Tulsa; L. S. Gregory, Tulsa; R. A. Halloran, Standard Oil Co. of California, San Francisco; F. E. Holsten, Barnsdall Refining Co., Tulsa; J. P. D. Hull, American Association of Petroleum Geologists, Tulsa; Robert M. Isham, Okmulgee, Okla.; J. V. Jirasek, Sharples Solvents Corp., Philadelphia, Pa.; Emby Kaye, Skelly Oil Co., Tulsa; A. J. Kerr, Midwest Equitable Meter Co., Tulsa; Kent K. Kimball, Tulsa; A. E. Lacomble, Shell Petroleum Corp., St. Louis, Mo.; B. W. Logue, Texas Co., Tulsa; K. G. Mackenzie, Texas Co., New York; Clarel B. Mapes, Mid-Continent Oil & Gas Association, Tulsa; F. L. Martin, Sunray Oil Co., Tulsa; T. Midgley, Ethyl Gasoline Corp., Detroit, Mich.; Walter Miller, Continental Oil Co., Ponca City, Okla.; J. C. Morrell, Universal Oil Products Co., Chicago; Roy Parker, Oklahoma Natural Gas Co., Tulsa; Wm. Plummer, Standard Oil Co. (Indiana), Chicago; J. H. Satterwhite, Westcott & Greis, Tulsa; W. W. Scheuman, Cities Service Oil Co., Tulsa; W. A. Schlueter, Refinery Supply Co., Tulsa; K. C. Sclater, petroleum engineer, Dallas, Tex.; D. A. Sillers, Lone Star Gas Co., Dallas, Tex.; C. A. Thomas, Monsanto Chemical Co., Dayton, Ohio; Arthur F. Truex, Sun Oil Co., Tulsa; Cary Wagner, Pure Oil Co., Chicago; Theron Wasson, Pure Oil Co., Chicago; M. F. Waters, Hanlon-Waters Co., Tulsa; B. B. Weatherby, Geophysical Research Corp., Tulsa; T. R. Weymouth, Columbia Gas & Electric Corp., New York City; D. C. Williams, Northern Oklahoma Gas Co., Ponca City, Okla.; E. C. Williams, Shell Development Co., Emeryville, Calif.; C. A. Young, American Petroleum Institute, Dallas, Tex.

The members from the Tulsa area will meet for dinner at the Tulsa Club, January 17, 6 p. m.

OBITUARIES

M. R. SHAFFER, 45, general manager of production, Cities Service Co., Bartlesville, Okla., died in the Research Hospital at Kansas City, Mo., January 11 from a throat

M. R. SHAFFER

infection. He joined Cities Service in 1916 at Oil Hill, Kans. He was born in Venango County, Pennsylvania, and worked in the oil fields in the East from 1909 until he moved to Kansas. In 1922 the company transferred him to Bartlesville as manager of production. He was a brother of George and Ernest Shaffer of Shaffer Specialty Co., Tulsa.

ALLEN WYNN CROSBY, 59, Houston, president of Wynn Crosby Drilling Co. and former vice president of Navarro Oil Co., Houston, Tex., died at his home January 7 after a brief illness.

C. F. GRAY, 51, of Nowata, Okla., district foreman for Stanolind Pipe Line Co., died suddenly on Thursday evening, January 6, while visiting a friend in Nowata. He had been employed by Stanolind Pipe Line Co. and its predecessor, Sinclair Pipe Line Co., since 1918.

E. J. McKEE, born in the Petrolia, Pa., oil field in 1882, died recently in a Dallas, Tex., hospital. During the Bridgeport, Ill., excitement he was employed by Ohio Oil Co., then moved to Oklahoma. He was chief petroleum engineer for Phillips Petroleum Co. at Oklahoma City until named general superintendent for Wirt Franklin Petroleum Corp. Last year he moved to Dallas where he was employed as petroleum engineer by Barnett Petroleum Co.

Madison Trial Draws to Close; Ickes-Arnott Letter Admitted

By R. B. PYRE

MADISON, Wis., Jan. 11.—Designated as the last witness for the defense, James D. Miller, certified public accountant of Bronxville, N. Y., returned to the stand in the oil trial in federal court today. Miller declared he found "a great number of cases" where prices paid by defendants in purchases of gasoline from independent refiners were improperly compared by government accountants. Many errors, he claimed, were made in listing purchases at prices above the low of published quotations in 1935 and 1936.

It was expected today that all testimony in the antitrust trial will be completed this week.

Bone of Contention

Bone of contention since the opening day of the trial, the now-famous "Ickes letter" was finally received in evidence Monday.

It was read to the jury by Hammond E. Chaffetz, government attorney, after the prosecution theretofore had consistently fought its introduction. "There has been so much said and so many questions raised about the letter that the government is inclined to waive its objection," Chaffetz explained.

After reading it, however, he contended it did not give Charles E. Arnott authority to sponsor a gasoline buying program.

Pointing to the physical and economic waste consequent upon price wars, the depression of the wholesale market and the building of a gasoline surplus, the letter, written July 20, 1934, authorized Arnott, as general stabilizer, to "take action which we deem necessary to restore markets to their normal condition," to appoint committees in a campaign to eliminate retail price wars, to "ascertain the elements of conflict," and seek, by cooperative effort, to stabilize the market.

"There is nothing here that says tankcar prices depress retail prices," Chaffetz declared.

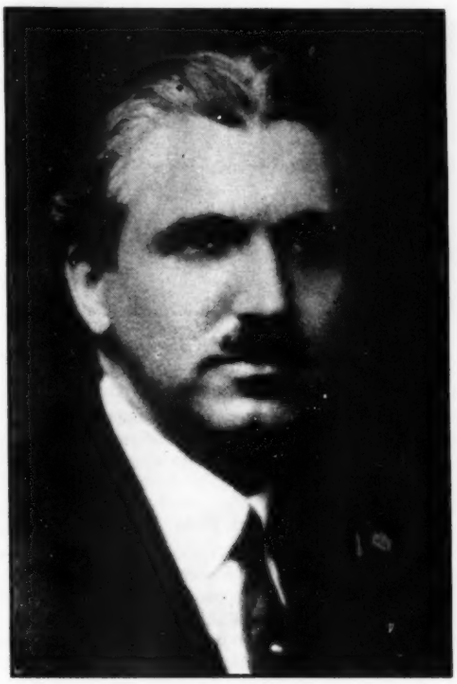
"I don't agree with you," Arnott replied, declaring he was told to "deal with elements of conflict," and that, he contended, essentially meant the "depressed tankcar price."

Explaining the circumstances that occasioned the letter, Arnott declared this was understood beforehand, and that he never would have undertaken the responsibility if it had not been recognized.

A short time before the letter was written, he explained, the Petroleum Administration Board had notified the Planning and Coordination Committee that price wars were getting out of hand, particularly in the Midwest, and "something had to be done."

They came to the conclusion, he continued, that the only way out was "to try to bring about a voluntary, cooperative effort and they asked me personally whether I would take on that responsibility." They had failed by compulsion, he added.

In that conversation, Arnott declared, there was a distinct consideration of the elements causing price wars and the fact that prices, over the entire Midwest, averaged more than 2 cents a gallon below normal. It was pointed out that the outstandingly important elements were subnormal tankcar markets, distress gasoline and "hot" oil. The matter was thoroughly discussed, and it was agreed the elements were so closely interrelated that "you could not deal with the retail price without dealing with the wholesale price."



C. E. ARNOTT

The board agreed with him and specifically stated, "We will authorize you to go out and deal with these refiners and deal with the elements of conflict," Arnott declared.

Administration Dispute

In relation to a government contention that Ickes had announced the suspension of buying programs at Dallas in November, 1934, because he believed they were illegal, Arnott said the program referred to by Ickes involved the purchase of all gasoline produced by independents in East Texas, including not only legitimate surpluses but probably "hot" gasoline as well.

"Quite a dispute arose between members of the Petroleum Administration Board and members of the department of justice who were down there as to the legality of any buying that had to do with all the gasoline of these refiners and also the legality of buying hot gasoline, and the secretary made the statement that he would not approve any such buying program," Arnott declared.

On cross-examination, Chaffetz introduced a letter to Arnott by L. L. Marcell, manager of Socony-Vacuum Oil Co.'s White Eagle division at Kansas City, on March 27, 1935, which stated it was "almost too good to believe" the way tankcar prices had been "acting lately." It added that if prices could be "strengthened" a half cent more, "our company can make a substantial profit."

Arnott admitted the tankcar price after that date not only went up another half cent, but subsequently an additional three-eighths of a cent.

After 16 hours in all on the witness stand, he was followed by J. D. Collett, former chairman of the P and C committee, who corroborated his testimony as to discussions before the P.A.B. in regard to "authority." Collett declared he knew of the major company buying program.

The defense succeeded Monday in getting before the jury another bit of evidence supporting its claim Secretary Ickes knew about and approved of the buying plan. It was a letter written by Ickes on March 30, 1935, to B. P. Lientz, Kansas City, Mo., which pointed out, on authority of the code survey report, that the chief difficulty of refiners apparently was due to "the disparity between posted crude oil prices and refiner realization" and it continued, "This situation has been deplorable for many months, but it is my understanding that at present the activity of the stabilization committee is having a distinct effect in the improvement of refinery prices. . . ."

David Gray on Stand

David Gray, Wichita Falls, Tex., former manager of Waggoner Refining Co., an alleged "co-conspirator," was called as a witness by Weymouth Kirkland, attorney for Standard of Indiana. Gray didn't know "until yesterday" that the Waggoner company was supposed to have been Standard's "dancing partner" and he denied his company participated in any program or conspired with anybody to violate the antitrust act. It had done business with Standard for many years, but there was no agreement to purchase any definite amount of gasoline and the company had no "distress" gasoline, he declared.

Confronted, on cross-examination with several letters and telegrams containing reference to "the buying group," Gray denied the term had any significance, claiming he referred to a group of major companies with which he had done business.

At the first night session of the trial since it opened, Judge Stone Monday held for further consideration the Ickes report for 1935 which declared stabilization activities had brought about "desired parity" of gasoline prices, and statements by Ickes and others regarding parity prices and stabilization before senate and house committees.

Even though Ickes' report may have been prepared by subordinates, he told government counsel, it was adopted by Ickes as "his own."

He sustained government objections, however, to defense offers of the final report by the P.A.B. also referring to stabilization accomplishments; the complete text of the petroleum code; the legal opinion of Louis Titus, attorney for the P and C committee, interpreting the Ickes letter; and evi-

dence that the administration "thought so well" of Arnott's activities in the Midwest that it considered sending his tankcar committee into Pennsylvania.

Ickes Approval

Arnott had testified it never occurred to him to ask specific approval from Administrator Harold L. Ickes for an activity which he considered an informal, cooperative effort and denied he defied the Petroleum Administration Board in connection with the buying plans. He would have stopped them, he declared, if he had been told to do so.

His statement that he considered he had ample authority for the buying program was supplemented by a certification, signed by Secretary Ickes in Washington and rushed to Madison by airplane, showing the status of Dr. John W. Frey, member of the P.A.B. who had testified he did not tell Arnott to stop the buying and as far as he knew no other board member had done so.

The document was received in evidence over the government's objection. To support their contention that Doctor Frey was only a "minor subordinate," prosecution attorneys read to the court a statement by Nathan Margold, former chairman of the P.A.B. after the code was adopted in 1933, announcing Doctor Frey's proposed employment for research work as a scientific adviser, but it was shown that Doctor Frey's status changed in 1934 when his authority was increased and his salary raised from $5,000 to $8,000. The certification was admitted when the government withdrew its objection. It disclosed that Doctor Frey was clothed with "unusual latitude for independent and unreviewed administrative and executive action and decision," and with "full responsibility for the success or failure of duties assigned to him" as head of the marketing division.

Among other things the documents also certified that Doctor Frey was delegated as personal representative of the administrator to "sit with committees of those engaged in the stabilization of wholesale and retail markets throughout large areas of the United States."

Before Arnott took the stand, the court sustained a government objection to introduction through Doctor Frey of testimony comparing the plan sponsored by Arnott with the government approved programs of 1934, but Arnott subsequently was permitted, without objection, to tell the differences between them.

T. P. Young, of counsel for the Shell Petroleum Corp., argued that the 1935 plan was a carryover from 1934, and that if these were not explained the jury would receive an erroneous impression of the hitherto sketchily mentioned programs of that year, declaring government counsel already had made "vindictive" references to them as being connected with "another case."

"If the jury does not know what the industry went through in 1934, it cannot get the picture of conditions early in 1935," Young said.

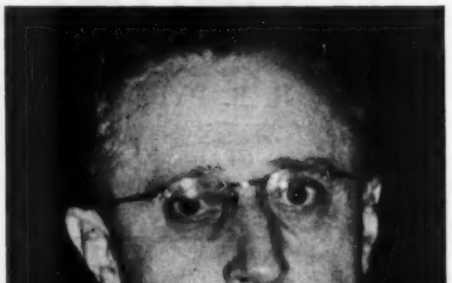
Judge Stone conceded during the argument, that "distress gasoline" was a factor in price wars, and in so doing revived argument over introduction of the Ickes letter delegating Arnott to stop price wars. When Arnott completed his direct testimony, the Ickes letter still was excluded from evidence though the court had under consideration the legal opinion of Louis Titus, attorney for the Planning and Coordination Committee, interpreting the letter as giving Arnott full authority and protection under the antitrust act for all "reasonable activities" in stabilization work.

Government attorneys, however, were allowed to read to the court, and later to the jury, another letter from Ickes to Arnott on April 2, 1935, which they claimed definitely limited the authority of the 1934 letter.

This communication informed Arnott complaints had been received from jobbers and other dealers that moratoria on dealer accounts oppressed them and pointed out that agreements involving the antitrust act and in which activities over an extended period involving a change of company policy depending upon similar activities by other companies must have specific approval.

The defense protested that this letter did not relate to the subject matter of the indictment, but prosecution attorneys insisted it was broad in scope and written in a realization that agreements to eliminate price wars were likely to be monopolistic.

Arnott identified the 1934 Ickes letter soon after taking the stand, but no immediate effort was made to introduce it and he referred to it only in connection with the price wars he was authorized to combat.



C. I. FRANCIS
Counsel for Pure Oil Co.

Buying Plan

The buying plan of 1935 was a continuance of his campaign against price wars, he said, and was recommended to him by a committee he appointed at a stabilization meeting in Chicago January 4. Representatives of small refiners at the Chicago meeting had complained nothing had been done for them under the code, he said, and that with the administration insisting upon maintenance of a $1.00 posted price for crude oil they would be forced to withdraw from observance of the code or close their plants unless something were done about tankcar prices. Many already had closed, he added.

R. W. McDowell and H. T. Ashton, members of the committee he had appointed to recommend a solution, told him in February the situation was serious and there was no doubt the independent refiners needed assistance. Then they outlined to him the plan which he and they thought was "wise and reasonable." They mentioned regular buyers in the Mid-Continent field who could assist in the salvation of small refiners if they knew where the distress gasoline could be purchased, he said. It was proposed that the committee make current surveys and put known buyers in contact with sellers, leaving the buyer and seller to carry on their own negotiations as to price, quantity, specifications, etc., and recommend only that the buyer pay "the fair going market price."

It involved no pool, no contractual commitments, was purely voluntary, with no percentage basis as to quantity dependent upon the size of the buyer, and was not to be placed in effect until the "hot" oil situation was under control, Arnott continued.

"They showed me," he said, "where this plan differed from the contractual pools of 1934. In these programs companies were required to buy regardless of whether they needed gasoline or not. In the 1934 programs also definite commitments were imposed, and the buyers' prices were fixed above the market."

He told the committee he thought the plan could be recommended, but he would not be ready to approve it definitely until after a meeting with independent refiners which he planned to attend at Kansas City on March 1.

Arnott, who had entered the oil business in 1895 as an employe of the Standard Oil Co., New Jersey, and had gradually advanced after training in foreign countries until he became president of the Socony-Vacuum Co. in 1932, told how he helped draft a "sorely needed" code for the oil industry even before the N.I.R.A. became effective.

He devoted almost his entire time to the code as chairman of the marketing committee under the P. and C. committee until the N.I.R.A. was invalidated, resigning the Socony-Vacuum presidency to accept a vice presidency and a directorship which enabled him to carry on his activities, he said.

Under authority of the Ickes letter, he testified, he organized committees that reached localities throughout the United States east of the Rockies and after the code ended gave his attention to the chairmanship of a committee named to prepare a new marketing code for submission to the federal trade commission. He is still a member of that committee, he said.

The meeting in Chicago January 4, 1935, was representative of the entire industry. He told those present of progress made in restoring retail markets through voluntary agreements reached at a series of meetings in December, but warned them there were indications already that the gains made then were not holding and "we'd soon be back to where we were" if the industry did not do something to consolidate them.

Price wars were in evidence everywhere and were growing more evident daily. Marketing circuits which overlapped one another and were not necessarily the only circuits in which all companies established there did business, were sensitive to every change, so that if a price war started in one of them "you immediately had to deal with 10 or a dozen others" and they quickly spread throughout entire states. In Georgia, the operations of one man kept the whole state "abnormal" for a full year, Arnott said.

East Texas Phase

Arnott then turned to the East Texas phase of the indictment, in which he, in association with other major company officials, is charged with having instigated the formation of a refiners' marketing association to "facilitate" purchases of gasoline from independents at artificial prices. He never met Neil Buckley, loaned to the association by Cities Service Export Oil Co. as its representative in contacting major buyers, he testified, until Buckley was sent to him at Pinehurst, N. C., where he was vacationing, and he never knew there was an association until then.

Buckley came, in February, 1935, to tell him the plight of small refiners who had decided to "reform" from "hot" oil practices and seek legitimate purchasers of their surplus. He described subsequent meetings held in Chicago and New York at which Buckley was permitted to outline the proposals of these refiners and which had discouraging results owing to almost "unanimous distrust" of their sincerity.

Our notable K. M. A. SECTION will appear next week!

In this connection, Arnott disclosed that the East Texas refiners were not the only group seeking aid of the stabilization committee and major companies at the New York meeting on March 6. O. D. Robinson, president of the Republic Oil Refining Co., was present, representing a group of Gulf Coast refiners who reported a "bad situation" in that field where inability to sell surplus gasoline had resulted in storage of eight to 10 ship cargoes totaling some 30,000,000 gallons.

Robinson had definite figures in regard to surplus but not as to allocations, while Buckley had no definite figures to offer, so he appointed a committee, including himself, to accompany Robinson and Buckley to a meeting of district allocators at Washington March 13. Three members of this committee were not indicted.

Later, on cross-examination, Arnott denied his purpose in attending the meeting was to tell about the "buying plan," and explained that his idea was to learn just what were the allocations of the two Texas groups and how much of their surplus was legitimate and how much was not.

Government Objections

For the first day or two of his testimony, Arnott proceeded with few interruptions, but when its more controversial phases were reached, government objections and arguments were frequent.

In denying that he defied the authority of the P.A.B. in connection with the Mid-Continent buying plan he declared he had every reason to believe Doctor Frey and Charles Fahy, chairman of the board, approved of the distress gasoline purchases. Doctor Frey, he said, must have been confused when he testified Arnott told the board at a meeting on March 12, 1935, that he was sponsoring the plan on his own authority.

The subject was not mentioned at the March 12 meeting, and his statement regarding "his own authority" was made in connection with "an entirely different matter," at the board's meeting on May 8, he declared. The board had raised questions in regard to general stabilization matters covered in a letter sent to him on April 22, involving three points, he said. This letter had instructed that no stabilization meetings be held without a representative of the board being present; that no decisions be made in relation to any matter until every activity in the industry had been heard; and that no orders or general instructions be issued under purported authority of the Ickes letter.

"I felt that in making my decisions under the July 20 letter there were times when I should use my own discretion and I told the board that in those matters I was taking the responsibility," he testified.

"Was it stated at the May 8 meeting that you had no authority for a buying program?" Colonel Donovan asked.

"I remember no such statement," Arnott replied.

A battle over Arnott's interpretation of Ickes' letter was halted when Judge Stone personally asked how he interpreted it.

After the allocators' meeting in Washington, he said, he called another meeting at New York on March 15, 1935, to which he invited representatives of major companies who had been asked to attend the March 6 gathering to hear Buckley's proposal, and in the light of this statement his telegram of invitation, previously read by government attorneys, was re-read to the jury.

"Surplus gasoline program must be finalized tomorrow," he had wired, and he explained this meant that the two refiner groups had been asking assistance for a month or more, and "I felt we had reached the time when if anyone was interested they should say so, in order that these two gentlemen might know what to expect."

But nobody at the meeting appeared willing to buy from the East Texas group and Buckley left in disappointment, he said. Later, however, he saw Buckley again before he left New York, and assured him some of the companies still might give his proposal some consideration. He mentioned the Sinclair, Gulf, Cities Service and other regular buyers in East Texas, and said he saw W. V. Hartmann of the Gulf company shortly afterwards in Pittsburgh, where Hartmann told him Buckley's proposition was worth considering if the "great distributors" really had reformed.

Commends Buckley

When Buckley appeared discouraged, Arnott also explained, he assured him he thought it was important that he continue with the work, as Buckley had demonstrated himself as thorough, sincere and conscientious and had gained the respect of the entire industry in "probably one of the meanest jobs a man could undertake."

But in April, 1935, when they met again in Excelsior Springs, Mo., Buckley told him he was planning to quit his special job with the East Texas association. Asked to explain a letter written by Buckley informing his superior, H. E. Brandli, that he had "promised" Arnott not to sever his connection until something could be done about his successor, Arnott said he knew of no reason why the question of Buckley's successor should be taken up with him except that "Mr. Buckley asked my advice at times."

He met Buckley again in November, 1935, at an A.P.I. convention in Los Angeles, where Buckley told him he had heard East Texas refiners were in a desperate plight and in need of orders for gasoline. Buckley asked him if he knew of anybody who might help them. Later, while he was in New Orleans in January, 1936, in connection with the proposed new code, he received a telephone call from Buckley informing him two East Texas refiners were threatening to dump gasoline at whatever price they could get.

In his activities as stabilizer, Arnott said he relied in part upon this address in which Ickes pointed out that although the code was only 10 days old, the retail price of gasoline already had advanced 30 per cent, the wholesale price 100 per cent and the crude oil price 250 per cent.

"It is your problem," he told the oil men, "to hold and consolidate this improvement so far as justified while paving the way for further improvement."

Other correspondents introduced included a letter by Fahy to Arnott after the code was invalidated, expressing "cordial appreciation" of his work, declaring the general situation was much improved and he hoped the results achieved would be maintained.

"Did you believe the P. A. B. and Dr. Frey were cooperating with you in your buying activities?" Donovan asked.

"I did," Arnott replied.

"Would you have discontinued these activities had Dr. Frey told you to?"

"I would have so discontinued them."

Donovan then sought again to introduce the Ickes letter and the Titus opinion, which the court had barred previously on ground that the authority contained in the letter did not extend beyond retail price wars.

"You can't consider price wars as a retail matter alone," Arnott told Judge Stone. "It just can't be done." While declining to admit the letter, the court announced he wanted to give Titus' opinion further consideration.

The last defense document introduced through Arnott was a letter to him from Ickes on July 25, 1935, expressing the administrator's appreciation of his "long and arduous work," which, Ickes said, was all worth while and "went a long way toward accomplishing the purposes of the code."

Hammond E. Chaffetz of the prosecution staff was permitted to question Arnott in regard to the alleged meetings held in the Blackstone Hotel, Chicago, between 1931 and 1936. He asked if the subject of uniform contracts was discussed at a meeting on Jan. 7, 1935, and Arnott replied, "It may well be," declaring all meetings at that time, "both big and small," were of a stabilization nature.

Attacking his denial that the purchasing of distress gasoline was designed primarily to raise the tankcar price, Chaffetz introduced a letter written to Arnott on March 12, 1935, by L. L. Marcell, manager of the Socony-Vacuum company's White Eagle division at Kansas City.

The letter, answering another previously introduced by the defense, said: "I had a conference with our marketing people yesterday about retail prices throughout our territory and they reported that they are holding remarkably well, so this stabilizing program has stood the test of the weak tankcar price, and I believe we are over the worst of the winter season condition. The buying program seems to be stimulating the gasoline tankcar price, and the outlook is more hopeful than it was two weeks ago when I left for Mexico City."

Arnott was quizzed also as to the whereabouts of his personal correspondence, and when he declared he presumed it was in the general files of the company, he was asked to produce all his correspondence with Buckley, particularly a memorandum relating to crude oil connections of East Texas refiners. Arnott said he would produce them if he could find them, but supposed that all correspondence had been subpoenaed.

The Ickes letter, however, was kept on his desk "all the time," he declared. "I wouldn't lose anything so valuable to me as that."

He was asked if he saw a statement to the press by Secretary Ickes, at Dallas, declaring he had suspended gasoline buying programs in 1935 because he had been advised they were illegal.

Arnott said he heard the statement, but understood Ickes was referring to a specific program. And when Chaffetz inquired if it wasn't true that the new proposed code for the industry contained no provision authorizing surplus gasoline purchasing, Arnott replied, "Quite correct; none, whatsoever."

He denied that he suggested to Dr. Frey, when he appeared unexpectedly in Chicago at what Chaffetz referred to as a "so-called" stabilization meeting, that Dr. Frey "ought not to attend."

"He was perfectly welcome, and he knew it," Arnott said, but Dr. Frey himself agreed that it wouldn't be wise for him to attend when he learned that representatives from all branches of the industry were present and realized that his presence might interfere with a "free expression."

Richfield Awarded Gasoline Contract by Oregon State

LOS ANGELES, Calif.—The state of Oregon will use Richfield gasoline exclusively for all institutional and highway requirements throughout 1938. Although in the past this business has been divided among several companies, Oregon, this year, has let a contract to the Richfield Oil Corp. to supply its entire needs. The contract provides for delivery during the year of approximately 2,000,000 gallons of gasoline and kerosene, estimated cost of the entire volume being in the neighborhood of $340,000.

New Oil Field Map

A revised edition of the map of Texas, eastern New Mexico, southern Oklahoma, southwestern Arkansas and western Louisiana has just been issued by Zingery Oil Map Co. of Fort Worth, Tex., showing more than 900 oil fields in this Mid-Continent and Gulf Coast area. The map is to a scale of 25 miles to the inch and shows all counties with oil and gas fields in red, the trends of oil-producing areas in these states and the relative location of the oil regions and individual fields. (Zingery Oil Map Co., Fair Building, Fort Worth, Tex., $1.)

Refinery Expansion

North Star Acquires Prairie Cities Canadian Property

REGINA, Saskatchewan.—W. R. MacArthur, general sales manager of North Star Oil, Ltd., of Winnipeg has officially announced the acquisition by his company of the property and assets of the Prairie Cities Oil Co. in Manitoba and Saskatchewan. Shareholders of the Prairie Cities company will receive cash for their holdings. The sale involves 278 bulk stations or agencies in the two provinces, tanks and equipment and a number of filling stations, 17 of them in Winnipeg. Staffs will be retained. The Prairie Cities Oil Co. has been operating in western Canada for 30 years.

Building of Solvent Plants Shows Prospect for Gain

NEW YORK.—The current year offers every prospect of establishing a new record in construction of solvent refining and dewaxing processes after somewhat of a lull during 1937. There are 17 "live" inquiries in the hands of solvent refining licensing companies and plant construction contractors which are due for action within the next few months. Considering that the customary percentage of interested companies will abandon plans for various reasons, 1938 offers the prospect of being a record breaking year in this particular phase of refinery construction.

Some of the new jobs for 1938 are now in the early stages of construction or are yet to come from the boards of the designing engineers. The 17 jobs mentioned above are in addition to any work now assured by executed contracts. The volume of lubricating oil to be extracted or dewaxed by the solvent processes now under consideration will total several thousand barrels per day. Some of the contemplated work involves expansion of existing plants, but a majority is in work entirely new in nature. In some instances, the plans contemplate abandonment of other type plants for preparation of lubricating oil, but in other instances they will be blended into the production facilities giving the effect of increased capacity.

Two of the newest solvent process applications are on the Pacific Coast where Standard Oil Co. of California is to build an acetone-benzol dewaxing plant and Shell Oil Co. has decided to install a furfural plant.

Bradford Completes Plant Modernization Program

BRADFORD, Pa.—Completion of a $570,000 modernization program initiated in March, 1937, at Bradford Oil Refining Co. plant here has been announced by company officials. An essential part of the program was a new solvent dewaxing plant placed in service last week. The new plant, licensed under patents of Texaco Development Co. and constructed by the Lummus Co., is of the benzol-acetone type and has a capacity of 600 bbls. daily.

Capacity of the plant's crude distillation unit was raised from 1,500 to 2,700 bbls. daily and a reforming unit added. Other work consisted of the installation of a new 450-hp. boiler, erection of a clay treating plant, the doubling of crude oil storage, and revamping of refining facilities.

New South Turner Valley Refineries Under Way

CALGARY, Alberta,—Economy Oils, Ltd. had announced that if weather is favorable, its new refinery on the Century lease in South Turner Valley will be put in operation by the middle of January. The plant, costing approximately $100,000, has a capacity of 500 bbls. a day, and will handle the Turner Valley product. It has 20,000 bbls. in storage.

High River Oil & Refining Syndicate, headed by Lionel L. Lindsay will commence construction of a 300-bbl. plant at High River, to be in operation by April. The plant, financed by High River, Calgary and British Columbia capital, will cost around $40,000.

A. H. Mayland, president of Mercury Oils, Ltd. and Gas & Oil Products, Ltd., the latter operating a gasoline absorption plant in South Turner Valley, visited Montreal recently to negotiate for the construction of a large refinery in South Turner Valley. It is understood the plans include tentative arrangements for extension of the McColl-Frontenac marketing organization into the Canadian West.

Pure Awards Contract for New Combination Unit

HOUSTON, Tex.—Pure Oil Co. has awarded the contract for construction of a new 20,000-bbl. combination unit to the Lummus Co. as part of new work to be completed at its Smith Bluff refinery in 1938. The entire improvement and enlargement program will involve an expenditure of approximately $2,500,000, it was stated. Present crude capacity of the plant is 38,000 bbls. daily and the cracking capacity, 29,000 bbls. daily.

Union Oil Awarded Gasoline Contract by Government

LOS ANGELES, Calif.—The United States government has just awarded Union Oil Co. a contract to supply 2,669,600 gallons of gasoline to federal agencies, according to word received at company headquarters here. The award was made by the procurement division, U. S. Treasury Department, for the first quarter of 1938. Deliveries are to be made to various government units including the army, CCC camps and postoffices on the Pacific Coast.

UNION BUILDING NEW UNIT

Highlight in the construction of Union Oil Co.'s new $2,000,000 cracking plant at Oleum, Calif., was the erection of the gigantic evaporator tower recently. The 150-ton vessel was skidded to its foundation in one piece in a horizontal position and hoisted above its concrete base with some of the largest heavy-duty rigging equipment ever used. Setting the huge vessel, 93 feet long by 13 feet in diameter, upon its base was a delicate operation, as holes in the drum's bottom flange had to be fitted exactly over big anchor bolts set in the concrete foundation to receive them. Construction of this cracking plant is a second step in Union Oil Co.'s expansion program. The first step, erection of a new $500,000 crude distillation unit of 15,000 bbls. daily capacity, has recently been completed and this unit is now operating at full capacity. The work was done under the supervision of Union's development department.

Plan Two Weeks Shut-Down Of Refinery at Sand Springs

The Sinclair Refining Co. 8,000-bbl. refinery at Sand Springs, Okla., will be shut down two weeks during the latter part of June to provide time for employe vacations. It has been customary for various Sinclair refineries to observe vacation periods by shutting down individual departments but this will be the first time an entire plant has been shut down to provide for vacations.

W.P.R.A. Annual Meeting to Be Held At Hot Springs, April 25, 26, 27

Mid-Continent refiners will meet in Hot Springs, Ark., April 25, 26 and 27 to discuss their technical and economic problems at the twenty-sixth annual meeting of the Western Petroleum Refiners Association, A. V. Bourque, secretary-treasurer of the association announced.

The technical phase of the program, being arranged by Emby Kaye, chairman of the manufacturing committee, will include several of the recently developed refining and treating processes and a discussion of the results of the vapor-lock road tests conducted last summer by the refiners association and the Natural Gasoline Association of America.

The road tests revealed inefficiencies in the fuel and carburetion systems of many American motor cars which caused wastages of gasoline, loss of power and failure to utilize the full value of the refiners' gasoline production.

The technical sessions of the meeting will be on Monday afternoon and Tuesday morning and the general sessions, devoted to economic and legal problems will be held Tuesday afternoon and Wednesday morning. A dinner dance to celebrate the twenty-sixth anniversary of the association will be held Tuesday night in the ballroom of the Arlington hotel where all sessions are to be held.

The meeting was purposely scheduled for Monday, Tuesday and Wednesday to permit refiners to spend the previous week-end at the health resort.

Natural Gasoline

Continental's New Billings Plant Nearing Completion

Continental Oil Co. is nearing completion of its new natural gasoline plant in the Billings field, Noble County, Oklahoma. The plant, to be of 20,000,000 cubic feet daily capacity, will process gas from wells of Continental, Tide Water Associated and other producers in the field. High compression will be employed to enable the use of residue gas for repressuring operations and for delivery to gas distribution systems in the vicinity of the field.

Materials for New Cayuga Field Gasoline Plant on Ground

FORT WORTH, Tex.—Materials for construction of a natural gasoline plant in the Cayuga field of Anderson County, Texas, are now on the ground and construction is to be started immediately. The plant is being built by Tide Water Associated Oil Co. and will be of the absorption type. Residue gas from the plant will be used in repressuring the Woodbine sand, principal oil-producing horizon at Cayuga.

The new plant will be the second in the field, Mid-Co Oil & Refining Co. having completed a 10,000,000-cubic-foot plant in the north end of the field in July, 1937.

Canadian Imports of Natural Gasoline Lower in October

OTTAWA, Ontario.—Imports into Canada in October of natural gasoline totaled 4,629,519 gallons, worth $329,060 of which 2,117,111 gallons, worth

$154,831 came from the United States and the remainder from Peru. This compared with 6,345,224 gallons, worth $407,956 in September, all from the United States.

Imports of gasoline lighter than .8235 gravity in October were 2,711,319 gallons worth $247,837, all from the United States; compared with 5,100,649 gallons worth $437,998 in September of which 115,000 gallons worth $7,900 came from Rumania and the remainder from the United States. Exports of gasoline and naphtha from Canada in October amounted to 624,119 gallons worth $50,875 compared with 69,007 gallons worth $7,736 in September.

Natural Gas

To Lay Submarine Gas Line To Golden Gate Exposition

LOS ANGELES, Calif.—Through a submarine gas line to be installed in San Francisco Bay the fair grounds of the Golden Gate International Exposition will be supplied with natural gas by Pacific Gas & Electric Co. An agreement has just been reached calling for a 4-inch line to be laid out to the end of the Key Route Fill from where it will continue under water to the island on which the fair grounds are to be situated. The submarine line will be approximately a mile long, and the entire connection is expected to cost $100,000.

The line will probably be a temporary installation which will be removed after the close of the fair. It is possible, however, that gas will be required for the airport which will occupy the grounds after the fair. In this case the submarine line may be laid in a trench in the bay bottom as a permanent installation.

Work will begin next fall and will be scheduled for completion before the opening of the exposition in February, 1939. An exhibit, sponsored by Pacific Coast Gas Association, will depict recent progress in the natural gas industry at the exposition.

Canadian Gas Production Less In First Ten Months of Year

OTTAWA, Ontario.—Natural gas production marketed from all Canadian fields in October amounted to 2,227,067,000 feet compared with 1,579,664,000 feet in September and 2,035,414,000 feet in October, 1936. Production for the 10 months of 1937 totaled 21,402,082,000 feet compared with 22,207,939,000 feet in the same period of 1936.

Imports of mixed (natural and artificial gas) into Canada in October were 11,140,000 feet worth $7,207 against 12,114,000 feet worth $7,873 in September.

Gas Production in Texas Up 7.19 Per Cent in November

AUSTIN, Tex.—The Railroad Commission reported that 2,013,998,000 feet of gas were produced daily during last November from 2,821 wells in 327 reservoirs in Texas. Sweet gas production totaled 1,305,889,000 feet and sour gas, 708,109,000 feet. The November gas production represented an increase of 7.19 per cent over October withdrawals when production amounted to 1,878,876,000 feet daily.

Dry gas disposals were: 26.4 per cent to pipe lines for domestic and industrial light and fuel; 5.32 per cent for lease development and operation, including gas-lift, repressuring and drilling, and 68.28 per cent to gasoline plants for gasoline extraction. Gasoline plant residues also were delivered to pipe lines and used for lease development and carbon black manufacturing.

The 136 gasoline plants reporting in operation processed 2,324,777,000 feet of gas daily from 34,714 oil wells and 1,056 gas wells, including 948,589,000 feet of casinghead, 692,066,000 feet of dry sweet and 683,086,000 feet of dry sour gas. Of gas processed by gasoline plants, 6.01 per cent was lost during extraction, 14.86 per cent was used for plant and lease purposes, 39.74 per cent was sold to carbon black plants, and 30.06 per cent was disposed of to pipe lines, 9.33 per cent was blown into the air.

Gasoline plants recovered 2,030,909 gallons of 26-70 grade gasoline and seven plants produced 221,474 gallons of butane-propane daily. The average gallons per 1,000 feet of gas processed was .873 and the total was in equivalent of approximately 150,000 bbls. of crude oil daily.

Forty carbon black plants reported 924,005,000 feet of residue burned daily, producing 1,309,352 pounds of carbon black, an average of 1.417 pounds per 1,000 feet processed.

New York and Pennsylvania Gas Field Completions

COUDERSPORT, Pa., Jan. 10.—Three wells were completed in the New York-Pennsylvania deep sand gas fields, one of them another failure for Warren County.

Both producers were in the Woodhull field of Steuben County, raising the total of completed wells in that field to 21.

New York State Natural Gas Co. completed its test on the Charles Finch farm on Dec. 30 at a total depth of 4,034 feet with an initial open flow of 19,500,000 cubic feet. This well found the top of the Oriskany at 4,019 feet. It had an initial rock pressure of 1,710 pounds.

Southwestern Development Co. completed its test on the Earl Brown farm at a total depth of 3,979 feet with an initial open flow of 15,000,000 cubic feet. This well topped the Oriskany at 3,972 feet and had an initial rock pressure of 1,440 pounds.

Kane Industrial Gas Co. completed its wildcat test on Lot 515, Watson Township, Warren County, as a failure at 4,435 feet. This test had a small show of gas in the Onondaga which failed to increase when the hole was drilled into the Oriskany. The test has been plugged and abandoned.

Pacific Coast Association Sets Annual Meeting Date

LOS ANGELES, Calif.—The Pacific Coast Gas Association will hold its annual meeting at the Biltmore Hotel, Santa Barbara, Calif., September 14-16.

Pipe Line Activity

Interstate Commerce Places Valuation on Empire Lines

WASHINGTON, D. C.—The Interstate Commerce Commission has placed a final valuation of $4,500,000 on properties of Empire Pipe Line Co., owned and used for common carrier purposes as of December 31, 1934.

It valued at $4,700,300 the total owned properties of the company which operates trunk lines in Kansas and Oklahoma and gathering lines in Kansas, Oklahoma and Texas.

The commission said the reproduction cost, new, would be $5,791,339.

I.C.C. Valuation Director Talks of Pipe Line Hearings

WASHINGTON, D. C.—Ernest I. Lewis, valuation director of the Interstate Commerce Commission, supporting a proposed appropriation for his division, told a house appropriations subcommittee a controversy over oil pipe line rates "is getting into a nice muddle and ripe for hearings." An oil pipe line valuation and rate inquiry, Mr. Lewis said, is "a very important matter right now."

For years, he said, pipe lines did not play an important part in the matter of rates, but now pipe line rates are "under fire" and the commission has instructed its valuation bureau "to get ready for these complications."

Survey Reported Under Way For Line from Cotton Valley

SHREVEPORT, La.—Standard Oil Co. of Louisiana has completed making survey of a proposed 6-inch pipe line from the Cotton Valley field of Webster Parish to tie into its main pipe line at a point near section 3-19-10.

Empire Pipe Line Co. Buys Root East Texas System

SHREVEPORT, La.—Root Petroleum Co., of Shreveport, La., has sold its gathering system in the East Texas field to Empire Pipe Line Co. The lines serve about 350 wells. Root, it is understood, will continue to get some oil from the Texas field, but is furnishing a market for southern Arkansas and northern Louisiana.

Humble Begins Construction On Two Jones County Lines

FORT WORTH, Tex.—Humble Pipe Line Co. has begun work on two pipe line projects in Jones County, Texas, which will permit connections to all producing areas in that portion of West Central Texas.

Placing pipe in line for welding

An 8-inch trunk carrier line is to be built from the Panhandle southward to the Eastland County booster station at Comyn, and will have connections into the Lewis, Avoca, Higgs, Sandy Ridge, Guitar and Hawley fields.

In order to serve Jones County's most promising new producing area, the Avoca field in the northeastern part of the county, a new 4-inch line will be connected directly with the Hawley booster station. Survey for this line is now being made.

United Gas Pipe Line Co. Extending Into K.M.A. Area

FORT WORTH, Tex.—United Gas Pipe Line Co. is extending its Electra-Wichita Falls gas transmission line into the K.M.A. field of southern Wichita County, and plans to lay feeder lines throughout the field to supply drilling rigs and lease operations where desired.

Contract Awarded for Line From Lisbon Field to Gillark

SHREVEPORT, La.—Contract is reported let to Fredell Construction Co., of Houston, Tex., for the new pipe line to be laid for Barbour & Woods of that city, from the Lisbon field of Claiborne and Lincoln parishes to the L. & A. Railroad at Gillark. The line will measure approximately 28 miles in length, and will constitute the third outlet for Lisbon crude.

INTERNATIONAL NEWS

Demand for Petroleum Is Increasing in Australia

The demand for petroleum products in Australia increased more than 1,000,000 bbls. during the first nine months of 1937, according to a report on imports. As in the past, the United States, Iran and the Netherlands East Indies supplied the bulk of products with exception of lubricating oil which is drawn almost exclusively from the United States. Statistics reveal importation of 7,862,325 bbls. of petroleum products during the first nine months compared to 6,777,470 bbls. for the same period in 1936.

Kerosene imports increased from 31,644,391 gallons in the first nine months of 1936 to 41,949,449 gallons in the same period last year. Crude oil imports advanced from 45,982,814 gallons to 49,634,840 gallons, lubricating oil from 11,664,631 gallons to 12,145,452 gallons, and other products, including gasoline, fuel oil, diesel oil and gas oil, from 195,361,843 gallons to 226,487,890 gallons. Out of the total imports of 7,862,325 bbls. for the first nine months of 1937, the Netherlands East Indies supplied 4,961,267 bbls., and Iran 1,130,415 bbls.

The United States participated in Australian petroleum imports for the first nine months to the extent of 1,677,068 bbls., outranking Iran by about 500,000 bbls.

Few Regular Employes in Mexican Oil Fields Abandon Their Jobs

The impasse between United States and British oil-company subsidiaries in Mexico and the government labor board continued unchanged last week with both factions determined not to yield from their respective stands. The labor board rescinded its order requiring the 16 oil companies to start payment of higher wages and the strike award pending a court ruling on the issue, contingent on the posting of unlimited bonds by the concerns. The oil companies promptly declined to accept the labor board's offer declaring themselves determined to await decision from the supreme court of Mexico which may be handed down in from six to eight weeks.

Physical conditions prevailing in the fields and at refineries were reported quiet last week. The oil companies previously advised their employes that they had found it impossible to comply with the board's wage ruling and that any worker dissatisfied with his prior wage scale need not appear for work. Following this ultimatum by the companies there was surprisingly few regular employes abandoning jobs.

The current situation was reported from Mexico City as one in which workers are confident that the government will bring about a satisfactory settlement and the companies are making a "last ditch" stand against a decision under which they say operation is impossible. The United States and British companies are presenting a united front to the government despite the Shell owned Mexican Eagle's new contract with the government petroleum company which virtually makes them partners in the operation of certain portions of the Poza Rica field.

Venezuelan Concessionaires Seek Low Gravity Tar Oil Production

Low gravity, tar oil is still attractive to owners of concessions in the Lake Maracaibo district of Venezuela. The latest quest for new production in this district has been started by Lago Petroleum Corp., producing subsidiary in Venezuela of Standard Oil Co. of New Jersey. The new wildcat test in the bed of Lake Maracaibo started by Lago is its No. 1 Bachaquero, about 3 or 4 kilometers from the shoreline.

Venezuela Oil Concessions, Shell subsidiary, carried on a modified development program on the shoreward side of the Bachaquero area during the latter part of 1937 and completed three wells to the tar oil pay and several more further north to the light oil horizon. Lago No. 1 Bachaquero is the first test drilled by the company in this portion of the lake. The Bachaquero area is south of Lagunillas and has been relegated to secondary development position because of the 12 degree gravity oil produced from the shallow sands. The low-gravity oil pay is quite permeable, one completion by Mene Grande Oil Co. registering flush output of 7,500 bbls. in 24 hours.

V.O.C. is planning a more intensive development program for 1938 and is reported planning to engage three rigs in this area for duration of the year. The company has constructed a dyke along the Lake Maracaibo shoreline in an effort to prevent partial or seasonal submersion of its property.

The line-up of operators in the Bachaquero district is about the same as at other productive points in the Lake Maracaibo district. Lago holds the property underlying the lake waters with exception of a strip 1 kilometer in width which is held by Mene Grande, the Gulf Oil Corp.'s subsidiary. V.O.C. holds the rights on acreage above the water level and extending inland for several kilometers.

Wood-Burning Rotary Rig Being Dispatched to Peru

A wood-burning, steam rotary rig capable of drilling to 6,000 feet or deeper, is being dispatched to eastern Peru by way of the Amazon and Ucayali rivers for exploration of a concession held in that territory by a group from California. The rig is the property of Drilling & Exploration Co., headed by J. E. Brantly of Dallas, Tex.

Douglas Fife, of California, is the resident geologist assigned to the exploration project.

Development in Hungary Stimulated by Discovery

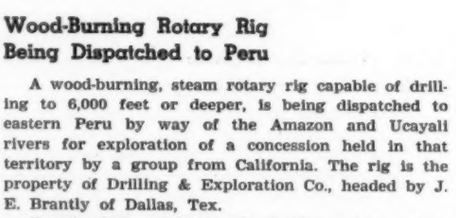
European Gas & Electric Co., affiliate of Standard Oil Co. (New Jersey), is moving rig and drilling equipment from its new discovery oil producer in southern Hungary to another location and will proceed with development of the structure near Lispe.

Since original production tests during which the discovery well flowed approximately 350 bbls. of 40 degree A.P.I. gravity crude per day through three-sixteenths inch choke, it has been shut in. It was drilled to completion depth of 3,962 feet.

The well is No. 2 Budafaputza. The first test drilled on the structure encountered a large volume of gas, but responded with high-gravity distillate production after it had remained shut in for several months. It was drilled on a location more removed from axis of the structure.

Another rig must be engaged in development of the structure within six months after completion of the first oil well. Temporarily, however, the drilling program will be continued with the rig employed over the discovery well. Indications are the structure may be 8 or 10 miles in length.

Since Hungary is almost completely dependent on imported petroleum to supply its internal demand of 5,000 bbls. per day the available market is inducive to at least reaching that volume of daily production with all dispatch.



10,000-bbl. spheroid erected for Lago Oil & Transport Co., Aruba, D.W.I.

Growing Deliveries From Iraq May Require Pipe Line Extension

Reports from Europe that crude oil pipe line capacity from Iraq to Mediterranean ports will be increased this year by a looping program have proved unconfirmable in New York. There is the possibility such a program may be considered later in the year if demand for Iraq crude oil justifies addition of transportation facilities, but there is nothing tangible along this line in the 1938 program.

During the past two years, the Iraq Pipe Line Co. system, originating in the Kirkuk field and terminating at Haifi and Tripoli on the Mediterranean Coast, has been operated nearly to its maximum capacity. To materially increase deliveries from Iraq oil fields the operators face addition of transportation facilities, either to the Persian Gulf or to the Mediterranean.

Netherlands East Indies Increase in Production

A sharp increase in crude oil production from the Palembang district of the Netherlands East Indies boosted output for the Dutch islands to about 14,261,597 bbls. for the third quarter of 1937. The third quarter production reported by the American trade commissioner at Batavia, Java, is an increase of 17.6 per cent over yield for the corresponding period in 1936.

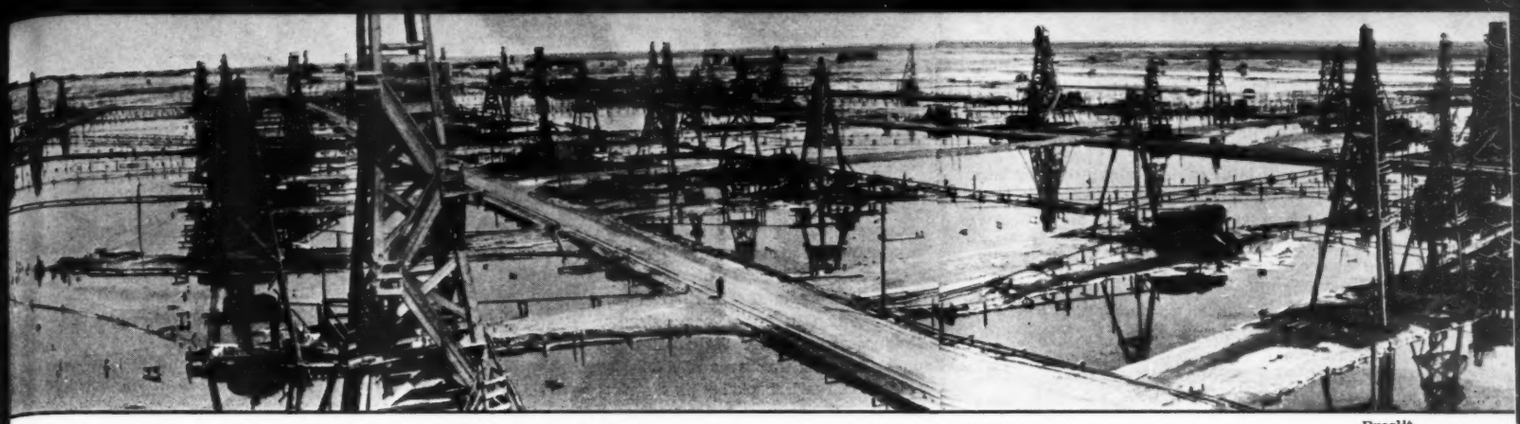
In the Palembang field alone, the June to September, 1937, production was 36.5 per cent higher than during the preceding quarter. For the entire group of islands, the third quarter output was 4.6 per cent higher than during the second quarter.

For the first three quarters of last year, the Netherlands East Indies produced approximately 40,853,467 bbls. of crude with each succeeding quarter gaining materially over that preceding. First quarter production totaled 12,953,024 bbls.; second quarter output was 13,628,836 bbls., and third quarter yield was 14,261,597 bbls.

Greater producing activity was also noted in the Ceram, Java, Djambi, South Borneo and Tarkan fields, but North Sumatra showed a decline of 1 per cent in the third quarter report.

Promising Indications Are Reported From Afganistan

A previously unknown oil and gas seepage was discovered recently in northwestern Afghanistan by Henry C. Rea, geologist on the staff of Inland Exploration Co. Reports reaching this country indicate that in addition to Mr. Rea's discovery, other promising anticlines have been found in Afghanistan by Inland geologists.



Preslit

Emba oil field, on the shores of the Caspian Sea

Oil Fields of the U.S.S.R.—

Geology and Productiveness

By WILLIAM J. KEMNITZER

Bashkir District

This district lies in the south central Urals centering near the town of Sterlitamak. It is an agricultural district principally. The present oil development has taken place in the Belaya River Valley between the towns of Ufa and Sterlitamak. The district is a slightly rolling plain with the red colored rocks of the Kungurian stage of the Permian at the surface. Alluvium, however, covers these rocks in the broad Belaya River Valley.

The Permian beds are very flat-lying. These are underlain by highly dislocated Paleozoic rocks ranging in age from Carboniferous to Cambrian inclusive. The Kungurian deposits, exposed in a number of separate patches in the red colored soil, are composed mainly of gypsum and occupy the vault part of a very gently sloping anticlinal zone, the limbs of which consist of Ufimian beds. A number of pseudo structures has resulted from sink-hole conditions.

The oil fields lie south of the town of Sterlitamak about 12 miles along the valley of the Belaya River. These fields are Ishimbaevo S. M. Kirov, and Smakaevo. North of west of Sterlitamak about 9 miles is Ryazanovka where prospecting is being done on a structure determined by geophysics.

Ishimaevo.—Oil seepages along the Belaya River south of Sterlitamak have been known since 1768. Before the Revolution, oil companies repeatedly prospected the area but without satisfactory results. In 1929, a systematic study of the area was begun by the Soviets. First drilling was started in 1931 when four deep wells were sunk in the vicinity of the village of Nizhne-Buranchina, 20 miles southwest of Sterlitimak. These wells discovered the Ishimbaevo oil field. At present, there are three producing localities in the field. One, the Western pool is on the left bank of the river at the site of the village of Nizhne-Buranchina; another, the Eastern pool, is on the right bank of the river; and the other, the Kusiankul pool, is situated about 2.5 miles north of the eastern area, also on the right bank of the Belaya. During 1936, about 6,776,000 bbls., of crude oil were produced from these fields.

Most of the area appeared to be covered with alluvium, but a few bedded rocks containing oil, crop out at several localities. The oldest rocks encountered in the wells are oil-bearing limestones, dolomitized limestones, and dolomites of Upper Carboniferous age. The limestones are characteristically irregular in structure and are supposed to be either "reef" deposits or erosional remnants. Showings of oil are obtained throughout the entire stratigraphic section beginning with the alluvium. Commercial accumulations, however, are confined to the Lower Artinskian (Upper Carboniferous) deposits, the chief reservoirs being "bundles" of highly dolomitized limestones.

Mr. Kemnitzer's Articles

This is a second installment of Mr. Kemnitzer's article on the oil fields of the U.S.S.R.; their geography, geology and relative productiveness, the first part of which was published in the December 31 International edition. The concluding section dealing with the Caucasian region will follow.

Mr. Kemnitzer has previously contributed articles in The Oil and Gas Journal on Soviet reserves, August 19 and September 23; Soviet exports and home market, September 30; Refining in U.S.S.R., October 7; Crude oil production in Russia, October 14; and Soviet problem of future reserves, October 28, 1937.

Initial production of wells ranges from 700 to 2,800 bbls., a day in the eastern field and from 700 to 4,200 bbls., in the western field. In the Western and Kusiankul pools considerable gas accompanies the oil, but in the Eastern pool little or no gas is present. The gravity of the oil averages about 31° A. P. I., and although rich in gasoline, is high in sulfur content which averages about 2.5 per cent.

Smakaevo.—During the first years of prospecting, at Ishimbaevo, drilling was also carried on in the areas immediately west (Allaguvat) and east (Smakaevo) of the producing area. Near the village of Smakaevo in conglomerates and sandstones along fissures in rocks, asphalts had been discovered which attracted attention to the area. After gravimetric and electrometric surveys had been made, five deep wells were drilled which reached the productive limestones at 3,600 feet but only showings of tars and colours of liquid oil were obtained.

Ryazanovka.—Prospecting wells drilled in this area reached the limestone at 1,950 and 2,400 feet but only showings were obtained.

Samarskaya Luka (Kuibyshev) District

The Samarskaya Luka or Kuibyshev district lies in Kuibyshev Territory (formerly Samara) southwest of Bashkir. In the vicinity of the towns of Syzran and Kuibyshev, the Volga River makes a pronounced curve of about 120 miles in length. The area bounded by this curve is known as Samarskaya Luka (Samara Bend). In the northern part of this bend, along the southern bank of the Volga are the Jiguli Hills which extend across the country in an east-west direction for over 60 miles. The district is primarily one of agriculture, especially of grain-growing but the cities are well populated and of industrial importance. There is one small producing oil field. Proved reserves are estimated at 53,900,000 bbls., and possible reserves amount to 1,258,600,000 barrels, or 18 per cent of the regional total.

The petroleum district is in the shape of a peninsula, its width being from 12 to 18 miles and length about 36 miles. The Jiguli Hills are cut by ravines and hollows into a series of isolated heights and ridges rising from 750 to 900 feet above the river. Excellent exposures of rocks occur on some of the crags and cliffs. Among the geological formations exposed are the Upper Carboniferous, Lower and Upper Permian, Jurassic, Cretaceous, Paleogene, Neogene, and post-Tertiary deposits. The greatest thickness of Upper Carboniferous exposed is 600 feet but its total thickness found in wells is 1,200 feet. They consist of limestones, dolomitic limestones and dolomites, with limestones at the bottom and dolomites at the top. At the base of the Lower Permian are white powdery dolomites about 20 feet thick. The Upper Permian beds are mainly bedded dolomites about 250 feet thick. The Lower Permian and Upper Carboniferous are developed more fully in this district than anywhere in the Volga provinces. Paleozoic deposits are overlapped by formations of Jurassic age. The overall thickness of the Jurassic is about 300 feet. Cretaceous deposits have survived only in the form of rather small islands of schistose clays, sands, and sandstones about 90 feet thick. The Pliocene exist as shreds on different horizons of Paleozoic and Mesozoic. Post-Tertiary alluvium several hundred feet thick mantles the older rocks.

The structure of the district is characterized by

the so-called Jiguli dislocation. As a result of this dislocation, the Upper Carboniferous were brought on a level with the Cretaceous and Paleogene beds. The plane of this fault extends along the northern edge of the Bend. Westward near Syzran the dislocation represents a flexure with an unbroken closed limb in which the whole series of Jurassic and Cretaceous beds is traceable dipping away towards the northwest. The magnitude of relative displacement in the district is about 1,050 feet. The intensity increases eastward. South of the fault, the Paleozoic and Mesozoic beds dip gently. Along the dislocation axis, in the Paleozoic beds are present several gently sloping uplifts alternating with wide and just as gentle dipping synclinal depressions. It is thought that the oil deposits are confined to these uplifts.

Asphalt occurs frequently in the Upper Carboniferous and Permian in the western part of the district, and sometimes reaches commercial proportions. The largest of these is at the mouth of Plitny Ravine seven miles below Pecherskoye. This stratified asphalt deposit is traceable in the base of the waterside escarpment for over a half mile. At Jiguli, near Bakhilavo village are considerable deposits of goudron sands in the Middle Jurassic. Here the degree of saturation is most inconsistent. The asphalt is supposed to be the exposed sections of oil reservoirs which lie at greater depth where there is a cover. The Jurassic asphalt is due to oil effusions which attended the Jiguli flexure.

The only oil field in the district is the Syzran, located a little over four miles north of the town of Syzran. The field lies on both sides of the Krymza River. About the beginning of 1937, six wells were completed at depths ranging from 1,968 to 4,248 feet, and five more wells are being drilled. The deepest of these has penetrated into the Upper Devonian more than 600 feet. The other wells have stopped in various horizons of the Lower Carboniferous. The structure is that of a gently sloping-uplift cut short on the northwestern side by the closing limb of the Jiguli flexure. The Paleozoic contains two oil-bearing horizons lying at depths between 2,920 to 2,040 feet, which yield from 7 to 14 bbls., of oil per well per day. The output of the deeper zone lying at 3,000 feet amounts to 350 bbls., per day. The upper sand about 40 feet thick is at the contact between the middle and lower Carboniferous in sands and clays underlain by limestones. This upper oil is rather heavy, 24° A. P. I., and contains from 1 to 2 per cent sulfur. The lower horizon, about 45 feet thick, is in the Lower Carboniferous in sands in a bed of black clays. The lower oil averages about 32° A. P. I. gravity but also contains considerable sulfur.

Orenburg-Aktubinsk District

This district lies on the southwestern slope of the Urals on the southern rim of the Soviet Permian Basin, south of Bashkir and east of Kuibyshev. The rocks at the surface are mostly lower Permian beds which disappear beneath the Upper Permian to the northwest and flank the Carboniferous and older Paleozoic strata on the east. Southward they disappear beneath Jura-Trias and Cretaceous beds. No commercial production has been developed to date, but oil is expected in the Permian, Carboniferous, and Devonian. At the first of the year three areas were being prospected by deep drilling, and possible reserves were estimated at 714,700,000 bbls.

Ukhtinski (North) District

This district lies on the western slope of the north Urals on the banks of the Pechora River. It is in an area of predominantly Carboniferous and older Paleozoic rocks. Although a small field, Ukhta has produced oil for a number of years; the output has never exceeded 500 bbls., per day. Proved reserves are estimated at less than 75,000,000 bbls., and possible reserves at less than 80,000,000 bbls. At present no prospecting is going on in the district.

Central Asia Region

The Central Asia region takes in the southwestern part of Asiatic U. S. S. R. north of Persia and Afghanistan, and extends eastward from the Caspian shore to Tibet. It is a vast region of diverse physiography and geology, but for the present, only about 52,000 square miles lying in three separate districts is considered to be commercially-important petroliferous land. The districts are S. Uzbeck and S. Tadjik (Bukhara), occupying 23,000 square miles just north of the Afghanistan border; Ferghana Valley, with an area of 17,000 square miles northeast of the Uzbeck-Tadjik district; and Turkmen, with 12,000 square miles southeast of the Caspian Sea.

The number of producing oil fields in the region is seven. During 1936 their combined output of crude oil averaged 12,274 bbls., daily, or 2.1 per cent of the average daily production in the U. S. S. R. First commercial production began in the year 1863, and from that time to January 1, 1937, approximately 29,589,000 bbls., of crude oil or 0.8 per cent of the total output of the U. S. S. R. had been produced. Proved reserves are estimated at 142,100,000 bbls., or 2.3 per cent of the national total; and possible reserves at 2,847,600,000 bbls., or 7.4 per cent of the total. Although proved reserves amount to only 4.6 per cent of the total reserves of the region, only 1 per cent of the ultimate production has thus far been produced. At the beginning of the year, nine new areas were being prospected by deep drilling. The oil is mostly of good quality yielding a high percentage of both gasoline and kerosene. It is found in wide stratigraphic range from the Paleogene to Silurian, in both limestones and sandstones.

Of the three districts, Turkmen appears to be the most important with about 48 per cent of the present production; 16 per cent of the proved reserves; and 61 per cent of the possible reserves. The S. Uzbeck and S. Tadjik district follows with approximately 42 per cent of the production, 65 per cent of the proved reserves and 26 per cent of the possible reserves. Ferghana Valley produces but 10 per cent of the output, holds but 18 per cent of the proved reserves, and 13 per cent of the possible reserves.

TABLE 7—PRODUCTION AND RESERVES OF CRUDE PETROLEUM IN THE CENTRAL ASIA REGION OF THE U.S.S.R. BY DISTRICTS, JANUARY 1, 1937

District—	Daily Average Output Crude Oil		Reserves					
			Proved		Possible		Total	
	Barrels	Per Cent	Thous. Bbls.	Per Cent	Thous. Bbls.	Per Cent	Thous. Bbls.	Per Cent
Turkmen	5,945	48 4	23,100	16 3	1,747,900	61 4	1,771,000	59 2
S. Uzbek and S. Tadjik	6,329	51 6	93,100	65 5	737,800	25 8	830,900	27 8
Ferghana Valley			25,900	18 2	361,900	12 8	387,800	13 0
Total Central Asia region	12,274	100 0	142,100	100 0	2,847,600	100 0	2,989,700	100 0
Per cent			4 7		95 3		100 0	

Turkmen District

The Turkmen district lies southeast of the Caspian Sea from the Gulf of Quara Bughas southeastward to the Persian border. Geologically, the district is a structural depression in Tertiary rocks lying between the highly disturbed and intruded Paleozoic and Mesozoic strata of the North Persian Mountains and the folded Mesozoic beds of the low-lying Mesozoic range to the north. The basin is a flat lowland of triangular shape with the wide end at the Caspian Sea. Recent alluvium and eolian deposits cover most of the surface, but eastward Neogene continental deposits, Paleogene and Cretaceous beds crop out successively. The Tertiary beds are folded parallel to the northwest-southeast strike of the enclosing mountain ranges. Regionally, the district lies southwest of a prominent escarpment trending northwest-southeast in line with the folding of the Main Caucasus across the Caspian Sea.

The principal productive areas are at Neftedag about 50 miles southeast of Krasnovodsk and some 20 miles in from the coast; and Cheleken Island 35 miles southeast of Krasnovodsk and northwest of Neftedag. The present output from all producing localities of the district averages about 6,000 bbls., daily but most of this comes from Neftedag. Proved reserves are estimated to be 23,100,000 bbls., or 16 per cent of the regional total. Possible reserves are estimated at 1,747,900,000 bbls., or 61 per cent of the total.

The surface rocks at Neftedag are of Lower Quaternary age. In the vicinity however, these beds are covered with later eolian deposits and Recent alluvium. To the north and on the east, Lower Cretaceous rocks crop out, and flanking these outcrops of older rocks are the Paleogene and Neogene. Neftedag is a faulted dome of east-west trend in Tertiary beds. Production is apparently from the Pliocene at depths of from 400 to 600 feet. Some of the oil is of more than 30° A. P. I. gravity, yields about 15 per cent gasoline and 20 per cent kerosene, and is of a high anti-knock quality. Originally, in the 1880s, oil was obtained in hand-dug shallow wells, but later deeper drilling has taken place.

On Cheleken Island, oil is obtained from Miocene sands at depths ranging from 30 to 850 feet on a faulted dome trending east-northeast and west southwest. The oil averages about 36° A.P.I. gravity.

Outside the district but adjacent thereto on the northeast is the great Kara Kum Basin which may offer some petroleum possibilities. This is a great structural basin lying south of the Sea of Aral to the Persian border. Its desert surface is covered mostly by eolian sands which overlie the Lower Quaternary and continental Neogene deposits beneath which are marine Neogene. The Cretaceous crops out around the borders, notably on the south along the escarpment which parallels the Persian border and in the west. Indications of oil and gas occur along the southern margin but no developments of importance are known to have taken place.

S. Uzbek and S. Tadjik District

This district lies in southeastern Uzbeck and southwestern Tadjik immediately north of the Afghanistan border along the upper reaches of the Amu-Darya River which flows from the western Himalaya Mountains northwestward into the Sea of Aral. It forms a geosynclinal valley in Tertiary and Mesozoic rocks surrounded on the west by mountains with a Middle Jurassic core; and on the north by the Pamir Mountains with a core of magmatic crystalline rocks flanked by altered Paleozoics; and on the east and south by the Hindu Kush of metamorphics flanked by Paleozoics and the Permian.

In the petroliferous area, Tertiary beds overlying the Cretaceous are arranged in a series of parallel north northeast-south southwest trending ridges separated by comparatively narrow alluvial valleys. The most important oil field is the Khaudag in the Bukhara area north of Termez. The output for the entire district was a little more than 5,000 bbls., daily in 1936. The oil is of high quality and is said to come from sands of Middle Jurassic and Paleozoic (mainly Silurian) age which underlie the comparatively thin Mesozoic and Tertiary. Proved reserves of the district are estimated at 93,000,000 bbls., or 65 per cent of the total for the Central Asia region. Possible reserves are estimated at 737,800,000 bbls., or 26 per cent of the total. At the first of the year, three localities were being prospected by deep drilling; they were Uch-Kizyl, Termez, and Shaambaryi.

(Continued on Page 42)

SERVICE ON NEW FIELDS

GREELEY FIELD, CALIFORNIA

Compiled by The Oil and Gas Journal, January 10, 1938

Approved name:

Greeley field.

Geographic location:

Kern County, California. Ten miles west of Bakersfield in the San Joaquin Valley.

Type of country:

Very gently rolling or flat topography characterizes the San Joaquin Valley. The field is within the flood area of the Kern River, so precautions must be taken against damage from high water in the spring. Area is served by good asphalt and concrete roads to within 1 mile of all wells, and good lease roads have been constructed.

Method of discovery:

Like Ten Section, Rio Bravo, and other valley-floor fields, the Greeley structure was discovered by reflection shots with seismograph.

Type of structure:

A subsurface anticlinal nose trending northwest-southeast with small local closure. Accumulation of oil is the result partly of structure and partly of sand conditions. A classic example showing the influence of sedimentation on the extent of the reservoir is given by the second well drilled. This was favorably located structurally but was completed as a dry hole because the sand was missing and in its place shale was encountered. Later drilling showed that the dry hole was situated between two very productive locations, proving that the shale had replaced the sand over a comparatively small area, or in a narrow strip.

Extent of producing sand:

The producing sand at Greeley, found at a depth of 7,600 to 7,750 feet, does not extend as far northwest as Union Oil Co. No. 1 Kern County Land, nor as far northeast as Continental Oil Co. No. 1 Kern County Land, in section 12. Neither of these wells found a sand in this stratigraphic position. The Greeley sand is regarded as Stevens sand, which is the productive member in Shell's Ten Section field located 7½ miles to the south. The stratigraphy above the oil sand in these two fields is the same. As yet it is not definitely known whether the sand discovered by Superior Oil Co. well 3½ miles southeast of the Greeley field is the Stevens sand. The brown Miocene shales which overlie the oil sand in the Greeley field become sandy to the southeast, and this makes correlation of the section questionable. It is possible that the Superior well produced from a sand not present at Greeley which should be correlated with a portion of the brown shale section.

Stratigraphic section penetrated:

After drilling the normal Pliocene section of the San Joaquin Valley floor, brown shale is found at about 7,000 feet. This is 600 to 700 feet thick, and is typically Miocene. Immediately below this is the producing sand. This is from 75 to 175 feet thick, and is a good porous sand with a few minor shale breaks. Below the producing sand section are further sands and shales.

History of development:

Discovery was made by Standard Oil Co. of California on December 23, 1936, when No. 11-1 Kern County Land well was completed flowing 2,700 bbls. of 36.7-degree gravity oil and 1,940,000 feet of natural gas. Before this well was started, Standard Oil Co. had leased a large block of acreage from Kern County Land Co. and from individuals. At the present time it is not believed that the productive area of the field will extend beyond the limits of this block. Superior Oil Co. is now drilling in the NW cor. section 21, Township 29s, Range 26e, on its Krause lease, but a recent drill-stem test yielded salt water, which may indicate the limit of production on the east edge of the field. The location is over a mile east of the discovery well, but one of Standard's later wells is less than one-half mile west, while No. 12-2 Kern County Land, a 3,000-bbl. well, lies one-half mile north and east. Standard Oil Co. has suspended drilling on a west offset to the Superior well to await the final outcome of the test. It is quite possible that the test indicates another irregularity in sand deposition similar to conditions disclosed by Standard Oil Co. dry hole in the middle of the field.

Drilling methods:

Drilling is comparatively easy, although the wells average 7,700 feet deep. Average drilling time is 40 days. Deep-well drilling practice as commonly used in California is followed. Heavy steam rotary rigs are used exclusively, making use of most of the latest improved equipment on the market. All rigs use hydromatic drawworks brakes. The "dead" end of the drilling line is always spooled on the drum of an auxiliary hoist so that the position of the line on the blocks can be changed frequently and the drill pipe can be removed from the hole with the small hoist in case the drawworks should fail. Beside the auxiliary hoist another hoist is always at hand. This is used to spool the wire line on which the wire-line core barrel is run. Vertical test instruments are often run above the core barrel on this line. The auxiliary hoist and wire-line drum are commonly mounted on the same steel frame and are driven by a steam engine mounted between the two reels.

Some individual rotary-table engines are used, since preferred drilling practice in this area calls for rapid rotation of the drill pipe, often 250 to 300 revolutions per minute.

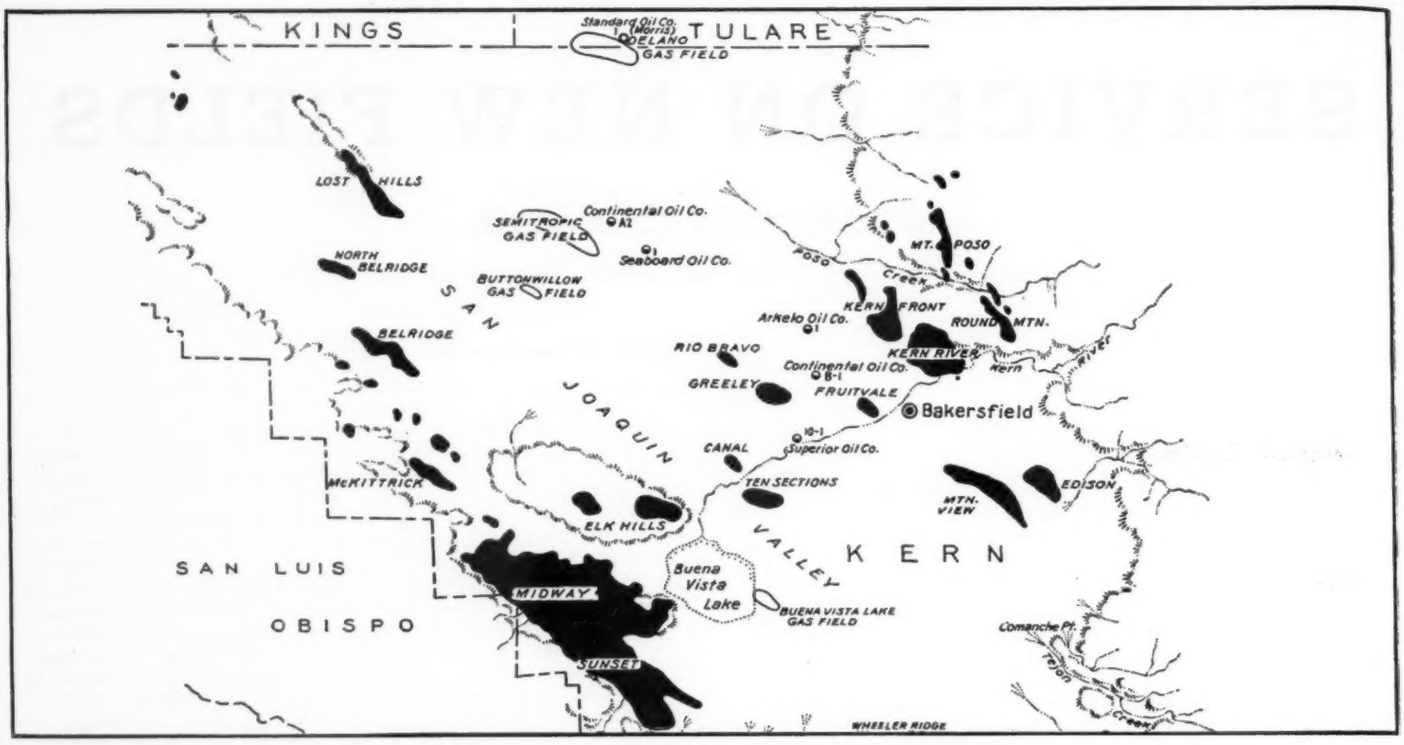
Drilling mud is tested for weight, viscosity, and sand content each shift. Most rigs employ two or more vibrating screens since a large volume of fluid is circulated under surface pump pressures of 1,200 pounds. Blowout preventers are used, but apparently there are no danger zones to cause blowouts, serious loss of circulation, or other troubles. The mud problem is therefore one of keeping the fluid essentially sand free to reduce danger of stuck drill pipe. With the high formation pressure prevailing in the field, danger of contaminating the pay with drilling fluid while drilling in is believed to be almost nonexistent. All mud must be purchased. To date a natural mud with conditioners added has always been used.

Vertical tests are made each time a round trip is made, and often the test instrument is run above the core barrel on the wire line. While the wells are all drilled by company tools and crews, they allow themselves only 3 degrees deviation from the vertical, and usually this limit is not closely approached. Vertical holes are considered a necessity in successful development of a sand of this depth.

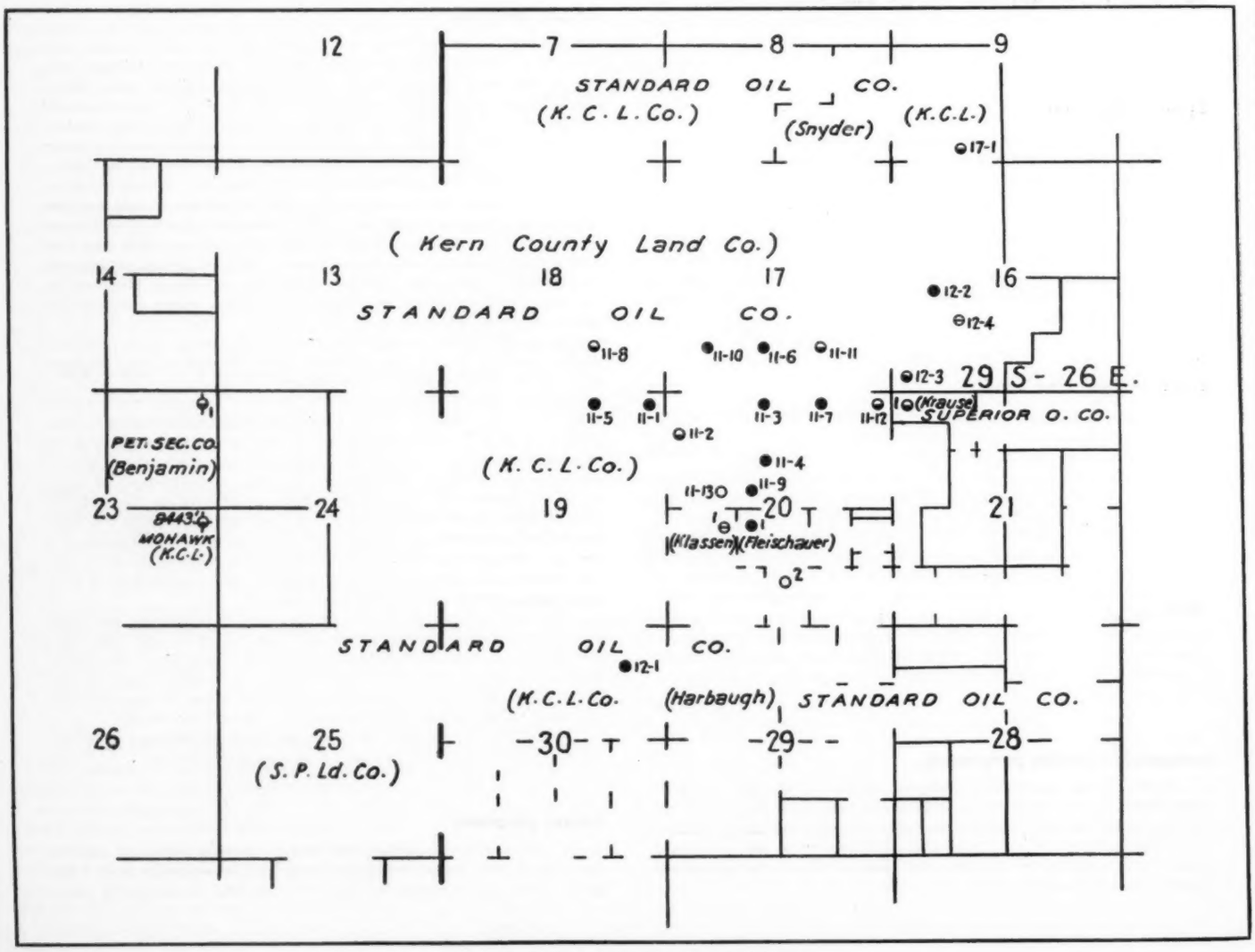
Water for boilers and all other purposes is obtained near the surface in water wells. It is soft, requiring no treatment.

Casing program:

A 1,000-foot string of 13⅜-inch surface pipe is cemented back to the surface. The water string is 9-inch and is cemented with 1,000 sacks in the shale immediately above the oil sand at a depth of about



Regional map of San Joaquin Valley field, California



Greeley field, Kern County, California

SERVICE ON NEW FIELDS

7,600 feet. A 7-inch liner with 60-mesh 2½-inch slots is hung from the water string through the oil sand penetrated. Smaller sizes of casing with 5-inch liners have been used on some wells on an experimental basis. The cement job on the water string must pass a drill-stem shut-off test to meet state requirements.

Well-logging practice:

Electric well logs are usually made of the entire hole. This requires three separate tests, one before setting surface casing, another before setting the water string, and a third before setting the liner. In some of the inside locations the first test is dispensed with. Electric logs furnish most of the data for correlation purposes. Regular drill-cutting samples are not taken. About 150 feet of wire-line coring takes place on each well. Cores are used to determine the casing point for the water string and for studying the condition of the producing zone. A drill-stem test is usually made before the water string is set.

Plan of development:

The well-spacing program calls for one well to each 20 acres in the same pattern used at Kettleman Hills. All lease pipe lines have been laid on section and quarter-section lines so that they will be out of the way of future locations and construction work. One tank battery is being erected for each quarter section. These are made up of two or more tanks with three or more high-pressure separators and as many low-pressure separators as are found necessary.

Production practice:

All of the wells are tubed before they are put on production. Usually 2½-inch tubing is used, and this is set well down inside of the slotted liner, or sometimes with a packer above the liner. Ordinarily packers are not used, since a combined tubing and casing flow is required to establish a satisfactory potential on most wells. Kick-off valves have been installed in some strings of tubing. Wells are brought in by swabbing in the tubing. The casing outlets are also opened at the well head during the initial production test, but the flow is restricted by chokes, as it is considered unnecessary risk to open a large well to capacity flow. After a well is on steady production, it is flowed only through the tubing with the surface choke regulated for the desired daily output. One edge well in the field produces 30 bbls. per day by stop-cocking.

Bottom-hole pressure surveys:

Bottom-hole pressure surveys are made about once every three months by Standard Oil Co. Initial well pressures are obtained by running pressure bombs on the bottom of the drill-stem formation tester. Some drop in formation pressure is apparent, which seems to indicate that there is not a very pronounced water drive against the oil reservoir.

Sand production:

Production of formation sand with the oil is small, and is not expected to cause any trouble. Clean-out work on the wells will be necessary only at widely spaced intervals, if at all.

Gas-oil ratio:

Average gas-oil ratio is 6,000 feet per barrel under the present rate of production. There is no gas cap in the field which has been recognized as such, but in the southeast portion, which is structurally higher, the oil is much lighter at the top of the sand, and more gas is liberated when the oil is produced. In order to reduce the gas-oil ratio, the upper part of the sand in these wells has been cemented behind blank sections of the liners.

Gravity of oil:

Gravity of the oil averages 35 degrees, but it is as high as 61 degrees in some wells producing from the top of the sand high on the structure. Sulfur content of the oil is very low.

Initial production of the wells:

Average initial production of Greeley wells is 3,000 bbls. per day. This, however, does not denote the wells' capacity, as the flow from both tubing and casing must pass through small chokes, and considerable pressure is held on the well head during the tests. Many believe that some of the wells are capable of producing about three times this quantity.

Gasoline plant:

A gasoline plant was recently constructed within the limits of the field by Standard Oil Co. Its capacity is 35,000,000 feet of gas per day. It is a combined pressure and absorption plant with separation accomplished under pressure. Most of the gas does not require compressing, however, since it comes from the high-pressure separators in the field under 450 pounds pressure. The compressor plant is equipped for four-stage compression, but only three stages are now in use.

Character of gas:

Greeley field gas is low in sulfur content, but it is also low in gasoline content. Average content is one-half gallon per 1,000 feet, but it varies with rate of production.

Pipe line facilities:

Only 6 miles of pipe line, excluding the gathering system, were necessary to connect the field with Standard Oil Co.'s Rio Bravo pump station to the south. The dry gas output is at present used for drilling, gasoline-plant operation, and delivery to the gas utility companies.

Price of oil:

Latest prices range from 84 cents per barrel for 27-degree gravity oil to $1.64 per barrel for oil of 48 degrees gravity or higher.

Present status:

Production from the Greeley field to December 1, 1937, totaled 414,685 bbls. Eleven wells have been completed, not including the dry hole, which is being deepened to test the Rio Bravo sand.

Prospects:

Sand conditions render it impossible to estimate the extent of the productive area, but observers believe that it will cover several square miles. Development will proceed slowly because subsurface conditions have proved to be irregular.

Completion of Union Oil Co. No. 1 Kern County Land, 5 miles to the northwest, indicates the probable presence of deeper production in the Greeley field. The Union well failed to find a sand in the stratigraphic position of the Stevens sand, but found a prolific sand deeper in the Miocene section. This produced 2,500 bbls. per day through a small choke from a depth of 11,302 feet. The sand is termed the Rio Bravo, and its presence is inferred in the Greeley area at approximately the same depth. Water has been found below the present productive sand, so a deeper test must penetrate and case off this water zone.

Osage Oil Lease Sale Ordered at Pawhuska, Okla., Jan. 26

Two Oklahoma Indian lease sales have been announced for January, one at the Osage Indian Agency in Pawhuska January 26 and one at the Pawnee Agency in Pawnee January 27. Tracts in Kay and Pawnee counties will be offered at the Pawnee sale, on sealed bids.

Leases on more than 50,000 acres will be offered at the Osage sale, at public auction including 25 tracts of 640 acres each, and 218 tracts of approximately 160 acres each. The Osage tracts are as follows:

EAST SIDE

Tr. No.	Description	Acres (more or less)
1	NE 32-20-12	160
2	*SE 32-20-12	92.33
3	NW 33-20-12	160
4	*SW 33-20-12	91.43
5	*SE 15-21-12	63.08
6	SW 4-23-12	160
7	NE 9-23-12	160
8	NW 10-23-12	160
9	NE 21-23-12	160
10	NW 21-23-12	160
11	*NE 3-24-12	56.67
12	NE 33-24-12	160
13	NE 7-25-12	160
14	SE 7-25-12	160
15	SW 8-25-12	160
16	NW 16-25-12	160
17	SE 8-26-12	160
18	SW 8-26-12	160
19	NE 17-26-12	160
20	NW 17-26-12	160
21	NW unleased portion of SE 33-26-12 and Fr. NE unleased portion of SW 33-26-12	80
22	NE 5-27-12	160
23	NW 5-27-12	160
24	SE 5-27-12	160
25	SW 5-27-12	160
26	SW 8-27-12	160
27	NW 17-27-12	160
28	NW 17-28-12	160
29	SW 17-28-12	160
30	NE 18-28-12	160
31	SE 18-28-12	160
32	NW 17-29-12	160
33	SW 17-29-12	160
34	NE 18-29-12	160
35	SE 18-29-12	160
36	NE 23-20-11	160
37	NW 24-20-11	160
38	SW 24-20-11	160
39	NW 25-20-11	160
40	NE 26-20-11	160
41	NE 30-20-11	160
42	SE 30-20-11	160
43	SW 5-21-11	160
44	SW 13-21-11	160
45	SE 14-21-11	160
46	NW 16-21-11	160
47	SW 16-21-11	160
48	NE 17-21-11	160
49	NE 4-22-11	160
50	SE 4-22-11	160
51	SE 17-22-11	160
52	SW 22-22-11	160
53	NE 23-22-11	160
54	NW 23-22-11	160
55	NE 27-22-11	160
56	NE 30-22-11	160
57	NW 30-22-11	160
58	SE 30-22-11	160
59	SW 30-22-11	160
60	NW 33-24-11	160
61	SW 33-24-11	160
62	SW 34-24-11	160
63	NW 12-25-11	160
64	SE 24-25-11	160
65	NE 12-26-11	160
66	SE 12-26-11	160
67	SW 12-26-11	160
68	NE 20-26-11	160
69	SW 7-27-11	160
70	NE 22-27-11	160
71	NW 22-27-11	160
72	NW 26-27-11	160
73	NE 34-27-11	160
74	SE 34-27-11	160
75	NE 33-20-10	160
76	*SE 33-20-10	96.06
77	NW 2-21-10	160
78	SW 2-21-10	160
79	NE 11-22-10	160
80	SE 14-22-10	160
81	NE 25-22-10	160
82	NW 25-22-10	160
83	SE 25-22-10	160
84	SE 29-23-10	160
85	NE 30-23-10	160
86	NE 35-23-10	160
87	NW 35-23-10	160
88	SW 35-23-10	160
89	SE 20-25-10	160
90	SW 21-25-10	160
91	SE 3-26-10	160
92	SW 3-26-10	160
93	NE 24-26-10	160
94	NW 24-26-10	160
95	SW 24-26-10	160
96	SW 12-27-10	160
97	NE 23-27-10	160
98	NW 23-27-10	160
99	SW 23-27-10	160
100	SE 9-28-10	160
101	SE 14-28-10	160
102	NE 3-20-9	160
103	SE 3-20-9	160
104	NE 4-20-9	160
105	SW 14-21-9	160
106	SE 15-21-9	160
107	NE 29-21-9	160
108	NE 33-21-9	160
109	NW 1-22-9	160
110	NE 2-22-9	160
111	SE 2-22-9	160
112	SE 10-22-9	160
113	SW 10-22-9	160
114	NE 14-22-9	160
115	SE 14-22-9	160
116	NE 15-22-9	160
117	NW 15-22-9	160
118	SE 21-22-9	160
119	SW 21-22-9	160
120	NW 2-23-9	160
121	SW 2-23-9	160
122	NE 3-23-9	160
123	NE 17-23-9	160
124	SE 17-23-9	160
125	SW 28-23-9	160
126	SW 5-24-9	160
127	SE 7-24-9	160
128	SW 8-24-9	160
129	NE 10-24-9	160
130	NW 10-24-9	160
131	NE 8-26-9	160
132	NW 8-26-9	160
133	NE 17-26-9	160
134	NW 17-26-9	160
135	SE 33-26-9	160
136	NW 34-26-9	160
137	NE 36-27-9	160
138	NW 36-27-9	160
139	SW 36-27-9	160
140	NE 28-28-9	160
141	NW 28-28-9	160
142	SE 28-28-9	160
143	SW 28-28-9	160
144	SE 16-29-9	160
145	NW 23-29-9	160
146	SW 23-29-9	160
147	NE 32-22-8	160
148	NW 32-22-8	160
149	NE 34-22-8	160
150	SE 34-22-8	160
151	NW 35-22-8	160
152	NE 36-22-8	160
153	NW 3-23-8	160
154	NE 22-23-8	160
155	SE 22-23-8	160
156	SW 23-23-8	160
157	SE 14-24-8	160
158	NE 23-24-8	160
159	NE 34-24-8	160
160	NW 34-24-8	160
161	SE 8-25-8	160
162	NE 17-25-8	160
163	NW 17-25-8	160
164	NE 19-27-8	160
165	NW 20-27-8	160
166	NW 15-29-8	160
167	SW 15-29-8	160
168	NE 16-29-8	160
169	SE 16-29-8	160

WEST SIDE

Tr. No.	Description	Acres (more or less)
170	NW 4-23-7	160
171	SW 4-23-7	160
172	SE 12-24-7	160
173	NE 13-24-7	160
174	NW 13-24-7	160
175	NW 26-24-7	160
176	NW 17-25-7	160
177	NE 18-25-7	160
178	SW 19-25-7	160
179	NE 28-25-7	160
180	SE 28-25-7	160
181	SW 28-25-7	160
182	NW 29-25-7	160
183	SE 29-25-7	160
184	SW 29-25-7	160
185	NE 2-27-7	160
186	SE 2-27-7	160
187	SW 22-28-7	160
188	NW 27-28-7	160
189	NE 28-28-7	160
190	SE 14-29-7	160
191	SW 14-29-7	160
192	NE 23-29-7	160
193	NW 23-29-7	160
194	NE 4-23-6	160
195	NW 4-23-6	160
196	SE 7-24-6	160
197	SW 8-24-6	160
198	NW 17-24-6	160
199	NE 18-24-6	160
200	NW 26-25-6	160
201	NE 9-24-5	160
202	NW 9-24-5	160
203	SE 9-24-5	160
204	SW 9-24-5	160
205	SE 9-26-5	160
206	SW 10-26-5	160
207	NW 15-26-5	160
208	NE 16-26-5	160
209	NE 2-28-5	160
210	NW 2-28-5	160
211	SE 2-28-5	160
212	SW 2-28-5	160
213	SW 15-25-4	160
214	SE 16-25-4	160
215	NE 21-25-4	160
216	NW 22-25-4	160
217	NE 10-25-3	160
218	NW 10-25-3	160

EAST SIDE

Tr. No.	Description	Acres (more or less)
219	sec. 27-20-11	640
220	sec. 3-21-11	640
221	sec. 36-26-11	640
222	sec. 1-28-11	640
223	sec. 22-20-10	640
224	sec. 12-21-10	640
225	sec. 4-23-10	640
226	sec. 36-25-10	640
227	S 1-2 sec. 7-26-10 and N 1-2 section 18-26-10	640
228	W 1-2 sec. 29-28-10 and E 1-2 sec. 30-28-10	640
229	sec. 28-29-10	640
230	W 1-2 sec. 29-29-8 and E 1-2 sec. 30-29 8	640

WEST SIDE

Tr. No.	Description	Acres (more or less)
231	sec. 8-23-7	640
232	sec. 20-23-7	640
233	sec. 27-23-7	640
234	W 1-2 sec. 7-24-7 and E 1-2 sec. 12-24-6	640
235	sec. 3-25-7	640
236	sec. 16-25-7	640
237	sec. 6-23-6	640
238	sec. 20-23-6	640
239	sec. 29-24-6	640
240	sec. 31-25-6	640
241	sec. 36-26-6	640
242	sec. 2-24-5	640
243	sec. 16-25-3	640

*Fractional.

Oil Fields of the U.S.S.R.

(Continued from Page 38)

Ferghana Valley Distr'ct

The Ferghana Valley lies mainly in extreme eastern Uzbeck which is surrounded on the north, east, and south by Kirgiz A. S. S. R., and on the west by Tadjik S. S. R. The basin, open only to the west, is enclosed by mountain ranges composed of ancient crystalline and sedimentary rocks. The basin itself is composed of Cretaceous, Tertiary, and Quaternary beds overlying the older Paleozoics. The basinal beds are folded in an east-west direction. Seepages of oil and gas issue from the folded Cretaceous and Tertiary beds.

Oil has been found at Chimion on a narrow overthrust dome, and at Sel Rokho on an east-west trending anticline. The oil is found in sandy horizons in Eocene clays, marls, and limestones, and in Upper Cretaceous argillaceous marls and limestones. Commercial accumulations of oil occur also in the Paleogene and Oligocene beds where they are associated with limestones. The thickness of the productive horizons ranges from 120 to 360 feet. The oil ranges in gravity from an average of 27° to 33° A. P. I. at Chimion and from 22° to 36° A. P. I. at Sel Rokho. The oils are predominantly light and contain an average of about 35 per cent of the higher fractions. Daily average production from the entire district amounted to about 1,200 bbls., in 1936. Proved reserves are estimated at 25,900,000 bbls., or 18 per cent of the regional total; and possible reserves at 361,900,000 bbls., or 13 per cent of the total. Deep prospecting is going on at Aririan, Andizhan, and Changirtash.

Far East Region

The Far East region occupies the eastern coast of Siberia from the Bering Sea in the north to the Japan Sea in the south, and includes the Kamchatka Peninsula and the northern half of Sakhalin Island which belongs to the U. S. S. R. It is a vast bleak region of complex geology containing a predominance of igneous and metamorphic rocks. Along great stretches of the coastal areas, however, are considerable thicknesses of Cretaceous and Tertiary beds in places overlying Jurassic and Paleozoic strata. Indications of oil occur at a number of localities but are not at all widespread. Commercial production has been developed only on Sakhalin Island. Outside that development no petroliferous areas of importance are known except possibly on the lower reaches of the Amur River opposite the northeast coast of Sakhalin; in the Voyampol district on the northwest coast of Kamchatka; and the Bogachevsk district on the central east coast of Kamchatka. At Voyampol a little commercial gas has been developed.

The total area of petroliferous land in the entire region does not exceed 9,000 square miles, or 1.2 per cent of the total petroliferous area of the U. S. S. R. There is only one commercially productive oil field, with an average daily output during 1936 of 5,908 bbls., of crude oil. Production began in 1921, and from that time to January 1, 1937 a total of 11,655,000 bbls., or 0.3 per cent of the total national production, has been produced. Proved reserves are estimated at 142,800,000 bbls., or 2.3 per cent of the national total; and possible reserves at 2,235,800,000 bbls., or 5.8 per cent of the total. The potentialities of the region, although considerable, are quite limited. At the beginning of the year only one new area was being prospected by deep drilling.

Sakhalin District

This district includes the northern half of Sakhalin Island which geologically and physiographically is a continuation of the northern part of Japan. The Island north of latitude 50° belongs to the U. S. S. R.; south of that line it belongs to Japan. The only commercially important oil field is in the Soviet part of the Island on the eastern side.

North of latitude 50°, the central core of the Island consists of altered Paleozoic rocks. These are flanked on the east and west by Cretaceous and Tertiary beds, but northward the Paleozoic disappears beneath the Neogene which in turn disappears beneath the Paleogene. Much of the northern part of the Island is covered by Lower Quaternary and Recent alluvium, and is a bleak terraced tableland. A line of oil seepages in the Pliocene extends in a belt from 5 to 10 miles wide, along the eastern side of the northern half of Soviet Sakhalin from Okha in the north to Chakre in the south, a distance of more than 180 miles. The principal seepages are around the bays of Urkt, Chaivo, and Nabil, and along Okha, Nogligk, Nabil, Nutovo and Botasyn Creeks.

The principal producing localities are at Okha-Ekhabi, Nutovo and Katangli. Considerable drilling has been done all along the coast. The commercially productive sands are in the Pliocene at depths ranging from less than 100 to 3,000 feet, but the most important production has been developed at about 500 feet and 700 feet. The oil at Okha averages about 21° A. P. I. gravity. The output of most of the wells is small ranging from a few barrels to 200 bbls., per day. Some prospecting has been done on the western side of the Island at Upper Armudan and Iangeri but nothing of importance has developed.

Other Areas

In addition to the producing areas in the several proved petroliferous regions of the U. S. S. R., are numerous other localities where prospecting is going on and where the occurrence of petroleum might be established. These localities are widely scattered over both the European and Asiatic sections of the vast territory of the U. S. S. R. The most important are: Romenski, east southeast of Kiev; Melitopol, north of the Sea of Azov; Western Uzbek along the Amu-Darya River south of the Sea of Aral; River Tavdy, north of Tyumen in Ural Province; River Yugan, in the Valley of the Ob in eastern Ural Province; Estuary of Enisei, at the mouth of the Enisei River in northeastern East Siberian Territory; Kuznetsk Basin; east of Novosibirsk in central West Siberian Territory; Minusinsk, along the headwaters of the Enisei River in eastern West Siberian Territory; Western Pribaikal, northwest of Irkutsk in southern East Siberian Territory; Lake Baikal, on the eastern shore of Lake Baikal in Buryat-Mongolian A. S. S. R.; Khatangan, between Khatanga Bay and the Anabar River in northwestern Yakut A S. S. R.; Lena-Vilyui, near Vilyuisk northwest of Yakutsk in central Yakut A. S. S. R.; River Aldan, in southeastern Yakut A. S. S. R.; Amur, at the mouth of the Amur River opposite the northwest coast of Sakhalin; Voyampol, on the northwest coast of Kamchatka Peninsula; and Bogachevsk, on the eastern coast of Kamchatka.

ENGINEERING and OPERATING

In This Issue

CALIFORNIA OPERATORS PREPARE TO DRILL TO EVEN GREATER DEPTHS
By T. P. Sanders ..... *Page 44*

Discovery of the Rio Bravo field in San Joaquin Valley has caused California operators to begin development of the deepest known reservoir, a sand lying at a depth of about 11,300 feet. In order to drill to this depth most efficiently, operators are using the latest improvements in equipment and drilling methods. New features include ball-bearing crown and traveling blocks, larger and higher-pressure boilers equipped with preheaters and heavier drilling equipment.

ACID TREATMENT OF COOLING WATER TO PREVENT SCALE FORMATION
By David W. Haering ..... *Page 46*

Sulfuric acid treatment of cooling water to prevent scale formation is being used by some companies, but despite the advantage that no mechanical equipment is required for the process the author suggests its use only under carefully controlled conditions. This is due to the sulfuric acid causing increases in carbon dioxide and sulfate contents and in increasing the corrosiveness of the water.

OPERATING IDEAS ..... *Page 51*

Reinforcing welded connections on repressuring plant. Equipping wells for future clean-out jobs. Unusual rack for holding diesel rig fuel tanks. Safety platform between ground and derrick ladders.

EFFECT OF CARBURETION AND MANIFOLDING ON FUEL KNOCK VALUES
By Earl Bartholomew, Harold Chalk and Benjamin Brewster ..... *Page 53*

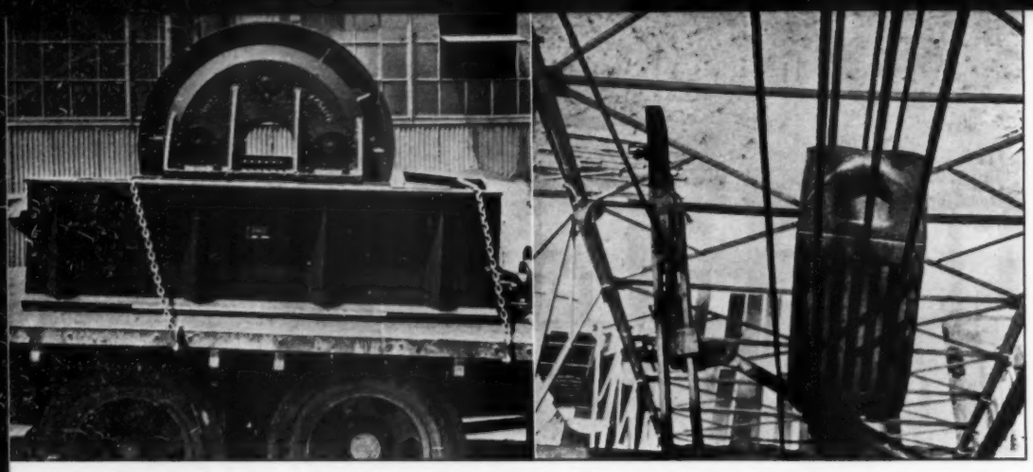
Development of laboratory testing methods to give knock ratings that correlate with ratings obtained in road tests has been a major problem with oil refiners and automobile manufacturers. Here the authors discuss the results of studies made to determine the effect of carburetion and manifolding on the relative antiknock value of fuels and the effects of recent changes in engine design.

QUESTIONS ON TECHNOLOGY—*By C. K. Francis, Ph. D.* ..... *Page 61*

Inhibiting hydrate deposits in gas lines with ammonia. "Sour" applied to natural gas and crude oil means hydrogen sulfide. Composition of Mid-Continent and Texas Gulf Coast natural gasolines.

PROBLEMS FROM READERS—*By L. G. E. Bignell* ..... *Page 62*

Data on underground temperatures encountered in oil wells. History of two types of steam drilling engines. Pre-Cambian rocks as possible oil and gas reservoirs. Leasing land in Texas.



New type ball-bearing traveling block and crown block. The five-sheave traveling block (shown on right) has the advantage of being narrower, this allowing more room in the derrick for stacking tall stands of drill pipe

California Operators Prepare For Even Deeper Drilling

By T. P. SANDERS

While the world's deepest producer is in California, deep drilling honors must be shared with Texas and Louisiana. Texas has the deepest hole ever drilled, Gulf Oil Corp.'s 12,786-foot Upton County test. Louisiana had the deepest producer, Humble Oil & Refining Co. No. 1 Ellender which produced from 11,630 feet before being plugged back recently. By comparison with these depths California's 11,302-foot record holder is somewhat dwarfed. Yet it is of far greater importance, because it discovered the Rio Bravo field, a prolific reservoir. This assures the drilling of many more wells of equal or greater depth in the same area. Also, it was another well drilled to great depth without serious trouble, and this fact helps to make deep drilling a more attractive investment.

The question naturally arises as to whether it is desirable that our deeply-buried reserves should be opened at this time when there remains so much to be accomplished in the line of secondary recovery in shallower pools. This question must remain one of comparative economics, and the comparison at present evidently favors deeper drilling. At least, an executive of one of California's largest companies recently advised equipment manufacturers to build for 15,000-foot drilling, as such equipment would soon be required.

Many improvements in deep-drilling equipment and methods are now under development, or have recently been introduced. These will aid in the coming program. Most improvements have meant heavier, larger capacity equipment, but sometimes there are factors limiting the usable size. For example, if a traveling block is too big, insufficient room is left in the derrick for stacking tall stands of drill pipe. Cases of this kind call for change of design.

Because of the huge steam demand on big rigs, steam-generating plants have come in for considerable revision. There was a time when larger steam requirements were always met with more boilers, so often an impressive number were lined up at a location. Now the demand is met with larger, higher-pressure boilers, three or four of which will leave no cause for complaint from drillers. The change resulted largely from the use of insulation, superheaters, more efficient gas burners, and feed water preheaters. A giant steam plant is being installed by Superior Oil Co. at an offset to Union Oil Co.'s Rio Bravo discovery well. This plant, consisting of four boilers and a superheater, will deliver steam at 350 pounds pressure and a temperature of 605° F. It is evident that steam of this kind is capable of doing a good deal more work than the old-style low pressure saturated steam.

Efficient Boiler Plant

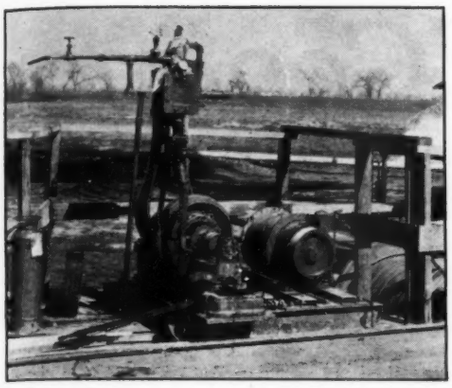
An exceptionally efficient boiler plant is used by Ohio Oil Co. in the San Joaquin Valley. The rig on which it is used drilled the Strand field discovery well. The large-size steam engines on this rig make such a boiler plant advisable. A 14- by 14-inch horizontal engine twin-drives the drawworks, while a 7- by 7-inch vertical twin-drives the rotary table. A 7¾- by 20-inch duplex power pump is driven by a 12- by 12-inch vertical twin. This is probably the largest steam engine ever used for pumping rotary mud. It drives the pump by means of a V-belt drive, using 18 belts. A duplex steam pump is used as a standby.

These large up-to-date engines had to have an efficient steam plant to realize their greatest advantages. As a result one of the best steam plants in the state was provided. The three 135-hp. insulated boilers are equipped with short stacks inside of which are steam jets to develop draft. Efficient combustion is obtained with automatic refractory-head gas burners. Air-draft doors in the sides of these burners automatically operate to give the proper air-gas mixture. When a greater volume of steam is required at the rig, the drop in pressure on the steam supply line actuates valves causing more gas to go to the burners, more air to be mixed with it, and more steam to be jetted in the boiler stacks to give a greater forced draft. The superheater, also automatically fired, maintains a superheat of 100 degrees. There is little waste of either heat or water. Exhaust steam from the engines is returned to the boiler-feed pumps where a feed-water heater condenses the steam and combines it with cold feed water. Thus the water as well as the heat of the exhaust is utilized. Oxygen freed in the water heater is discharged to avoid introducing it into the boilers where it would cause corrosion.

Ball-bearing sheave for traveling blocks and crown blocks and the inventor, Les Black

A type of deep-well steam generator has been introduced which combines a boiler and superheater in one unit. This is designed to utilize the heat of the stack gases more thoroughly. It is evident that there are still economies of this kind possible on the steam rig. The fact that a rig is a temporary installation usually determines how far it is advantageous to go in increasing steam-plant efficiency. Other manufacturers are approaching the subject of economizing on steam from a different angle. Using internal flush-joint drill pipe in a deep hole, it has become possible to circulate the same volume of fluid with pump pressures several hundred pounds lower. Thus less steam is required for the pumps.

For those who may consider the descent of mud engineers and experts on the industry as a flagrant bit of over-specialization, it is well to remember that mud is usually the weakest factor in deep-drilling practice. Most of the San Joaquin Valley deep tests have had trouble with stuck drill pipe, and in most cases this is believed to have been caused by mud trou-



Small steam-driven hoist used for running vertical tests on one of Standard Oil Co.'s drilling rigs in the Greeley field

bles. Some operators are starting to use calcareous material in the mud so that acid can be used as an aid in dislodging stuck drill pipe. The varied requirements which must be met by the drilling fluid used in a deep hole have caused an intense study of mud characteristics. It must be fluid enough to pump readily and not offer undue resistance to the rotation of the drill pipe. At the same time it must be viscous enough to carry cuttings efficiently. It must be heavy enough to support the walls of the hole, but if it is too heavy the hydrostatic pressure at the bottom of the hole will be so great that mud will be forced into the oil sands.

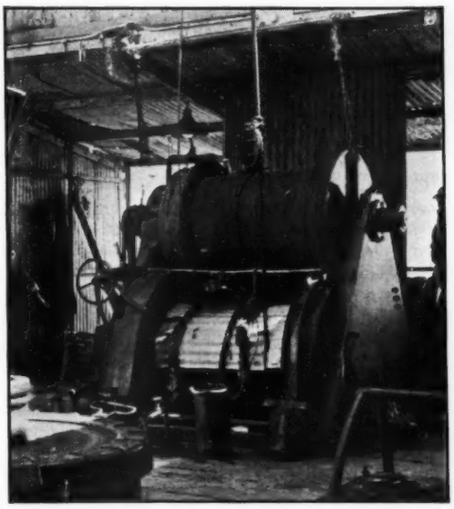
It was found in drilling the Rio Bravo discovery well that at depths in the neighborhood of 11,000 feet the mud tended to pack in the bottom of the hole. This was a very serious condition, and was caused by the enormous hydrostatic pressure squeezing water from the mud into the walls of the hole. Trouble was avoided by frequent mud changes, but this indicates a coming need for fluids giving up water less readily under pressure.

The importance of straight holes in deep drilling, or in any kind of drilling, cannot be overrated. Within the last few years operators have realized that the cheapest hole to drill is the straight one. Time spent in keeping the hole vertical is repaid by good progress throughout the entire depth of the hole, freedom from trouble, and reduced wear on equipment. Realization of the importance of straight holes has brought about a revision of vertical test methods. Great accuracy is demanded of instruments, and tests must be made within a few feet of the bottom of the hole so that the driller has a clear understanding of the conditions on bottom all the time drilling is in progress.

Information from vertical tests determines the speed of drilling. This perhaps is the biggest change drilling has undergone in recent years. For it was not long ago that vertical tests were unknown, then for several years they were used primarily to antagonize drilling contractors and company drillers who believed that the cheapest way to drill a well was to load the bit quite heavily and let it seek its own path. Out of fairness toward these men it should be brought out that these older vertical tests were inefficient for purposes other than antagonism. Taken 100 feet or so off bottom, these tests seldom showed a hole to be crooked before it had reached an angle which would necessitate considerable expense in straightening or in plugging back. Also, their accuracy could often be questioned. Because of determining drilling speed by vertical-test results, deep holes are now drilled straighter than would have been considered possible a few years ago. The world's deepest producer is not more than two degrees off vertical anywhere in its 11,302 feet of hole.

The operators at one deep test reamed the hole to straighten it when it became two degrees off vertical. Most California companies are especially particular about the surface hole, requiring the hole must not vary more than one degree before the surface string is set.

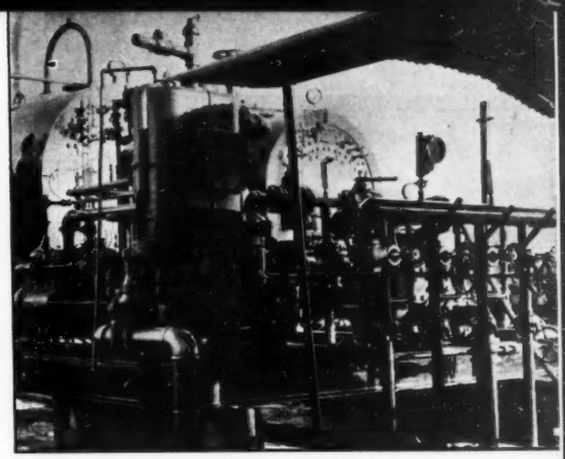
Emphasis on straight drilling has brought about other changes in deep drilling. While weight applied to the bit has been greatly reduced, speed of rotation has been greatly increased. A few years ago drill pipe was ordinarily rotated about 100 r.p.m. Now California drillers rotate sometimes in excess of 350 r.p.m. The individual rotary-table



Stand-by hoist and wire-line drum mounted as one unit with an electric motor. This equipment is in use on a Continental Oil Co. rig in San Joaquin Valley

engine, and other improved surface equipment, have played a part in this change by making this practice mechanically possible. The most suitable weight, as well as the most suitable speed of rotation, are dependent on the character of the formation being drilled, and also on the straightness of the hole and the ability of the driller.

In deep drilling the drilling lines must be subjected to great stresses. This has largely been taken care of by high-grade alloy steel and careful manufacture, but operators have been concerned with reducing abnormal stresses. The use of auxiliary hoists to which the dead end of the line



Feed-water preheater used by Ohio Oil Co. on its Strand field discovery well. This unit condenses exhaust steam from the engines and mixes it with the cold feed water

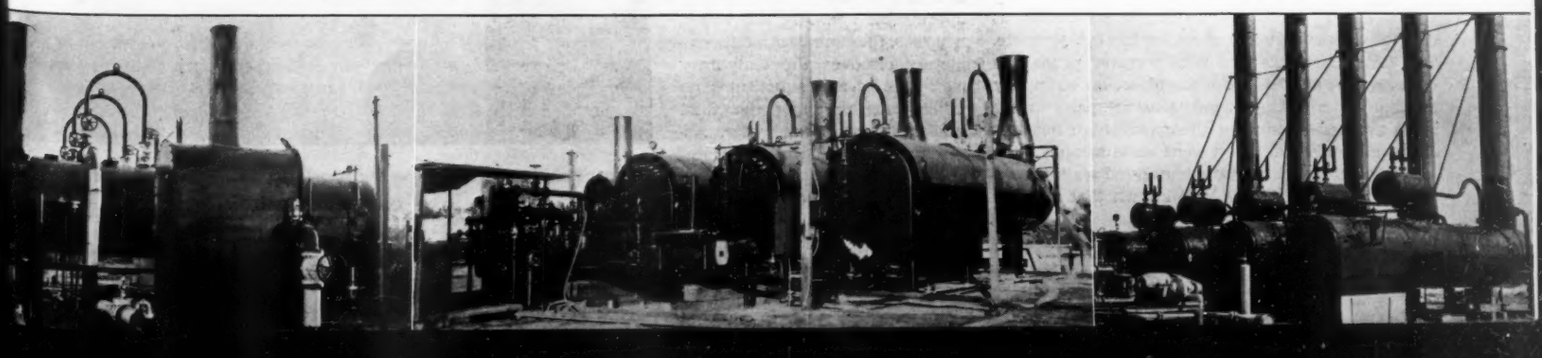
is attached has avoided much of the wire-line fatigue caused by having the line always in the same position on the drum and blocks. Traveling and crown blocks are made with sheaves of extra-large diameter to reduce flexing action. Hoist drums are still not as large in diameter as would be desirable because brakes are not on hand which will safely control heavy loads on very large drums. The hydromatic brake has been a great boon to deep drilling, and it is understood that some future rigs will make use of electric generators for brakes, but both of these types are designed for controlling the speed at which the tools are lowered into the hole, and another brake is required for stopping and holding the load. When a more powerful brake of this kind is available, the size of drawworks' drums will probably increase.

A new type of traveling and crown block has just been introduced and used with good results for deepening two deep Los Angeles Basin wells. It is a distinct departure from the conventional design. Instead of having the sheaves revolving about a pin or axle through the center of the block, they revolve on ball bearings around a hollow steel drum of rather large diameter. Each sheave is therefore just a heavy steel rim. The inner periphery of the rim is grooved to form a race for ball bearings, and a race on the hollow drum also accommodates the bearings. In this way five or more sheaves are mounted side by side to make up either the traveling block or crown block.

With this construction a block to handle heavy loads can be made narrower than the conventional type, since the large diameter of the ball-bearing race affords sufficient bearing surface without using a wide sheave. The conventional sheave must be wide enough at its hub to provide ample bearing surface, and the sheaves must be separated by thrust plates. The new type narrower blocks leave more room in the derrick for stacking drill pipe, they are lighter, and yet they will fall faster when empty because of the ball bearings.

It is still possible to find a few deep-drilling rigs in California which are unbalanced. That is, a rig with large, powerful engines may be equipped with a so-called "barber-shop" steam plant. These situations are a result of the unexpectedly large drilling campaigns of the past year, which have exhausted drilling budgets in many concerns.

(Left) Boiler plant used by Ohio Oil Co. on its Strand discovery well. (Center) Modern three-unit boiler plant with short steam-jetted stacks. The boiler-feed pumps, together with the generator and water preheater are all mounted on skids as one unit. (Right) Battery of high-pressure boilers used to drill Superior Oil Co.'s wildcat near the Ten Section field



Acid Treatment of Cooling Water to Prevent Scale Formation

By DAVID W. HAERING
Technical Director, D. W. Haering & Co., Inc.

Sulfuric acid treatment for the prevention of scale formation is being used on cooling waters, based on the greater solubility of calcium sulfate as compared to calcium carbonate. This principle of treatment ignores the well established and fundamental fact of water chemistry that calcium carbonate sludge, in the absence of other materials, is nonadherent. Studies of the process of scale formation have long since established the fact that the prevention of scale formation does not depend on the prevention of precipitation, but on the prevention of adherent precipitation as compared to nonadherent precipitation. Of the ordinary scale-forming ingredients, in natural water, calcium carbonate is nonadherent, whereas sulfate, silicate and corrosion products are adherent and provide binder for the formation of scale containing large proportions of calcium carbonate. The calcium carbonate may constitute the major content of the scale, but the calcium carbonate is not the cause.

Corrosive Factors

Corrosive factors normally present in cooling waters may be mentioned as acidity, or low pH, oxygen, carbon dioxide, hydrogen sulfide, chloride and sulfate. Any treatment for the prevention of scale must be considered in its effect on these elements. The use of sulfuric acid treatment for the elimination of carbonate, can only increase sulfate and carbon dioxide contents, while having no desirable effect on any other corrosive element. It must be considered a definite fact that any sulfuric acid treated water will normally be more corrosive than the original raw water.

Concentrations carried in cooling systems are a measure of the efficiency of the water treating system, as well as the cooling system itself. Sulfuric acid treated waters generally are carried in concentrations from 50 to 100 grains per gallon, which are ridiculously low compared to the 300 to 600 grains per gallon normally carried with other treating systems.

Thickness of Scale

The thickness of scale must not be regarded as a measure of its objectionable character. Very thick calcium carbonate scales are not nearly as damaging as extremely thin silica and sulfate scale. The heat resistance and heat transfer properties of a given scale determine its effect on efficiency and sulfate and silica depositions are particularly to be avoided because of their very high heat resistance properties. One recent scale sample from a sulfuric acid treated water analyzed a silica content of 28 per cent. It is well known that silica is less soluble at low pH values and as concentration occurs in the cooling system, it appears probable that silica deposition is increased as a result of sulfuric acid treatment. Silica is not only present in all natural waters, but is frequently carried into cooling system waters as a result of atmospheric exposure.

Calcium sulfate has an inverse solubility curve which means that solubility decreases with increasing temperature. From 104° F., to 212° F., the solubility of calcium sulfate as gypsum decreases from 2,110 p.p.m. to 1,695 p.p.m., and as semihydrate from 6,080 p.p.m. to 1,645 p.p.m. The temperature of the cooling water should not be regarded as the temperature at which scale formation will take place, as much higher temperatures actually exist on the heat transfer surfaces and higher concentrations of solids exist in the film of water traveling across the heat transfer surface than actually exist in the main body of flow. Calcium sulfate deposition can be prevented, to a large extent, by concentration control, but the low and inefficient concentrations carried in sulfuric acid treated systems bear witness to the danger of running anywhere near the solubility limits for this material.

The primary advantage of sulfuric acid treatment for the prevention of scale, is in the elimination of mechanical equipment. There is little apparent advantage from a chemical standpoint in the resulting water and certainly no advantage over lime treatment, on the basis of cost and results. One hundred sixty-two grams of calcium bicarbonate react with 98 grams of sulfuric acid, whereas 162 grams of calcium bicarbonate will be removed by 74 grams of lime. There is no apparent cost advantage in the use of sulfuric acid since lime is a cheaper chemical and materially less of it is required to precipitate the calcium bicarbonate. The sulfuric acid treatment results in the formation of calcium sulfate leaving appreciable solids in the water, whereas, the lime treatment completely removes the temporary hardness and substitutes no solids thus reducing the total solids content of the water. Assuming a natural water containing 20 grains per gallon of calcium bicarbonate and 20 grains per gallon of calcium sulfate, treatment with sulfuric acid would result in a total content of 36.8 grains per gallon of calcium sulfate, whereas, treatment with lime would result in a total content of only 20 grains per gallon of calcium sulfate.

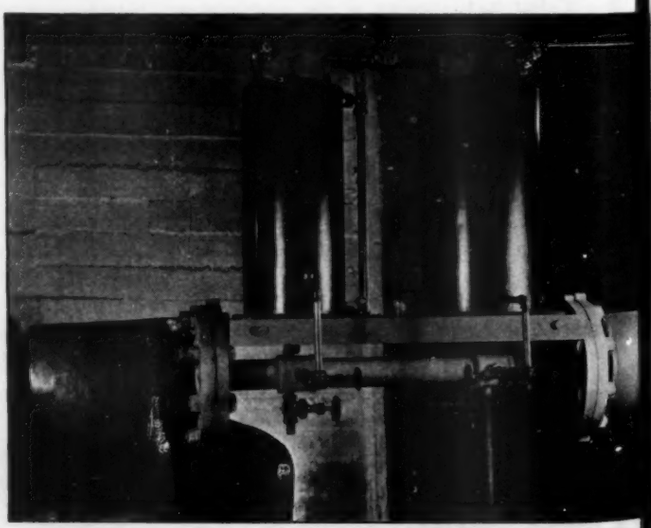
Zeolitic Treatment

Zeolite treatment of this same water would result in the conversion of 21.8 grains of sodium bicarbonate and 20.8 grains of sodium sulfate. Some of the sodium bicarbonate would break down to sodium carbonate under the influence of heat and reduce this total solids content somewhat. Better results can be obtained by combining the lime zeolite treatment. If the same water is pretreated with lime and then passed through the zeolite we end up with 20.8 grains per gallon of sodium sulfate which would represent a fairly desirable water.

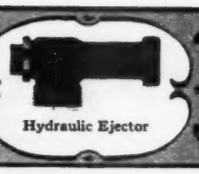
If we take a hypothetical natural water, containing 4 p.p.m. of oxygen, 60 p.p.m. of carbon dioxide, 340 p.p.m. of calcium carbonate, 170 p.p.m. of magnesium, 340 p.p.m. of calcium sulfate, 170 p.p.m. of magnesium sulfate, 70 p.p.m. of sodium chloride, 15 p.p.m. of silica and 30 p.p.m. of sodium sulfate, with a total solids content of 1,135 p.p.m., we can get the following results by treatment with different methods.

Using the sulfuric acid treatment, we would still have 4 p.p.m. of oxygen and 60 or more p.p.m. of carbon dioxide representing corrosive factors. We would have 625 p.p.m. of calcium sulfate and 328 p.p.m. of magnesium sulfate which would increase the sulfate content of the water under the influence of concentration to corrosive values. We would still have 15 p.p.m. of silica which would be responsible for scale formation. The total solids content would be 1,068 p.p.m., or a negligible change.

If we treat the same water by zeolite, we would still have the oxygen and carbon dioxide representing corrosive factors, and the silica which would form scale. We would have converted all of our hardness into sodium sulfate and bicarbonate which would normally increase in the system and increase the corrosive characteristics of the water. The total solids content would have been increased



Organic chemicals being proportioned into water for scale & corrosion control.


Hydraulic Ejector

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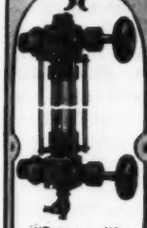
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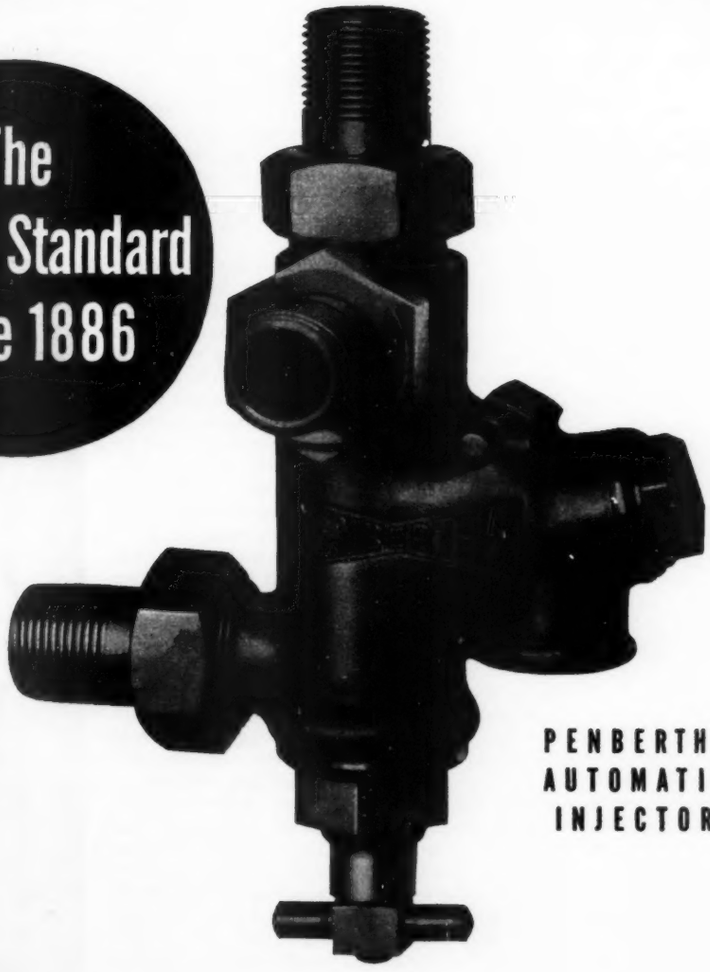

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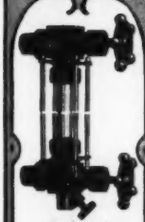
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to 1,242 p.p.m., which would not represent a very important change.

If we pretreat the same water with lime, we would still have the oxygen content but we would have eliminated the carbon dioxide and the bicarbonate hardness leaving only the calcium and magnesium sulfates in the water, along with the silica and original sodium chloride. The total solids would have been reduced to 625 p.p.m., a reduction of almost one-half. The water would still be corrosive and would still be scale forming due to silica content, but the after treatment requirements would be less than with the other types of water and a generally more satisfactory water would be available.

In the case of pretreatment with lime, followed by zeolite softening, we would also get rid of the carbon dioxide and all of the hardness leaving only sodium sulfate as a result of the reaction along with the silica and the total solids would be reduced to 668 p.p.m. This would represent a much better water than is available through any of the other methods and would require much less after treatment for the control of corrosion, although silica deposition would be a factor here as with the other waters.

From the theoretical calculations involved we have not considered the possible reaction between magnesium sulfate and lime using lime pretreatment, but this is unimportant since this reaction would only result in replacement with an equivalent amount of calcium sulfate which would still make the lime pretreated water much superior to the acid-treated water.

The choice of proper methods of treating water mechanically depends on a variety of factors. It is not apparent from this study where the sulfuric acid treatment can really be justified, except as a means of avoiding capital expenditure. It should be apparent that the acid treatment is a hazardous procedure requiring careful control which should not be left in the hards of the ordinary operator. The danger of personal injury and damage to equipment from mishandling of the acid treatment should be considered as an additional cost factor when comparing this method with other available means of pretreating water. Inadequate softening equipment is responsible for several types of makeshift water treating. This condition is most generally apparent with zeolite softened water, although similar ideas are used with raw water.

Combination Treatment

Sulfuric acid treatment has been suggested as a supplementary treatment to a zeolite softener in cases where the softener is inadequate. Assuming a 100,000-gallon-a-day flow of "make up" water, 66,000 gallons might be softened through the zeolite softener and 34,000 gallons softened by means of sulfuric acid treatment. This naturally means the introduction of relatively large volumes of calcium sulfate into a system water relatively high in carbonate and bicarbonate. The immediate result is necessarily the precipitation of calcium carbonate sludge with the formation of sodium sulfate. The calcium carbonate sludge, in conjunction with the calcium sulfate introduced into the water, would probably be responsible for some tendencies toward scale formation, although the primary factor would be the increased tendency toward corrosion as a result of the introduction of additional carbon dioxide and tendencies to lower pH values. The production of sludge in water using equipment is objectionable and should be avoided whenever possible. The use of tower basins and hot wells as settling basins for the removal of sludge is a necessary evil under any condition and certainly should not be increased by the deliberate production of sludge in the system. There is no advantage to the introduction of acid into a zeolite softened cooling water, since under all normal conditions the recurring aeration over the tower keeps alkalinities well below hydrate values and there is no tendency to reach excessive alkalinities.

Another method of handling an inadequate softening situation is to by-pass a portion of the raw water. In other words, using a 100,000-gallon daily flow of "make up" we might soften 66,000 gallons of water and by-pass 34,000 gallons of raw water. The resulting precipitation of hardness will be somewhat greater than in the case of a sulfated water but the expense of handling sulfuric acid will be eliminated. Such a method of handling inadequate softening is superior to continually overloading the softener with its destructive effect on the life of the equipment. The sodium carbonate generated by the softener can be used as a softening agent for the precipitation of introduced hardness, thus obtaining some additional efficiency from the operating cost of the softener. The remaining hardness in the water can be compensated for by the use of beta glucoside or a similar glucoside derivative and in all cases, regardless of the type of pretreatment used, chrom glucosate should be employed for the prevention of corrosion.

Hot Treatment

Another method of cooling system treatment is to pipe the blowoff water from the boilers into the cooling tower, or hot well, for the purpose of partially softening and precipitating the water. This method of treatment is generally used where the "make up" is entirely raw water, but it may also be used occasionally in conjunction with partially softened water. Normally, the method is used in conjunction with zeolite softened boiler water which has tendencies to run high alkalinities and also in conjunction with a continuous blowdown system which provides some measure of control over conditions. The natural effect is the same as the introduction of a solution of soda ash which results in precipitation of some hardness as sludge. This method of treatment does not compensate for corrosive elements and also introduces additional concentration into the system. It does not completely compensate for hardness present and will not prevent scale. It introduces a sludge element which is undesirable in the system. It should be noted in conjunction with any method of treatment along this line that cooling systems are not designated for use as sedimentation basins and that sludge removal by sedimentation in a cooling system is extremely inefficient.

In the average cooling system there are two scale-forming surfaces to be considered, those of the engines and compressors and those of the heat exchanger coils. Temperatures, generally speaking, are much higher in the engines and compressors and scale formation tends to be harder and more heat resistant. The design of the average heat exchanger coil is such that the tubes are staggered and there is practically no opportunity for water to wash away sludge. The tendency for any sludge carried into the tower is to bake on the coils and form scale, aside from the fact that sludge itself is an insulating medium which is objectionable on any heat transfer surface.

Conclusions

In conclusion, we do not recommend the use of sulfuric acid treatment for the reasons noted. If sulfuric acid treatment is used in spite of these factors, it should only be applied under rigid control with a competent chemist in the vicinity. One hundred fifty p.p.m. of chrom glucosate should be carried in the system water at all times for protection against temporary fluctuations due to failure to properly control conditions. Even under the control of a competent chemist fluctuations from the desired conditions should be expected and provided for.

As a means of sulfating water, we recommend the use of lime pretreatment to precipitate bicarbonate hardness leaving sulfate hardness in the water. This reduces the total solids content and removes carbon dioxide. One hundred p.p.m. of chrom glucosate should be carried in such a water for corrosion control and, depending on the amount of calcium sulfate present, from 50 to 100 p.p.m. of beta glucoside may be desirable for protection from scale.

All natural waters contain silica and we recommend treatment of all cooling system waters for the prevention of silica deposition. A minimum of 50 p.p.m. of beta glucoside should be maintained in cooling system waters for this purpose.

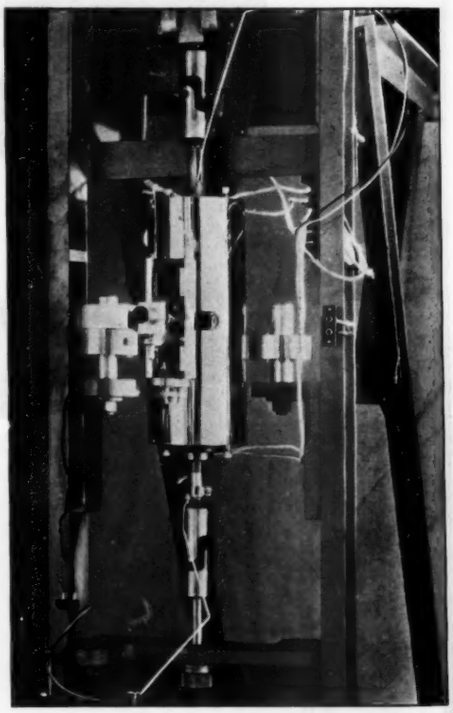
Zeolite softened waters should contain a 100 p.p.m. content of chrom glucosate for protection from scale and corrosion.

Lime zeolite treated waters should contain 50 p.p.m. of chrom glucosate for protection from corrosion and silica up to 20 p.p.m. Silica values in excess of 20 p.p.m. call for chrom glucosate concentrations in the neighborhood of 100 p.p.m.

With hard waters, we recommend carrying concentrations in the cooling system at 300 grains per gallon or 5,000 p.p.m. With zeolite softened waters or with lime zeolite treated waters, dissolved solids concentrations may be carried at 600 grains per gallon or 10,000 p.p.m.

We recommend avoiding all unnecessary introduction of sludge into the cooling system and recommend avoiding any unnecessary use of this equipment as a reaction tank.

MODERN ELECTRIC FURNACE

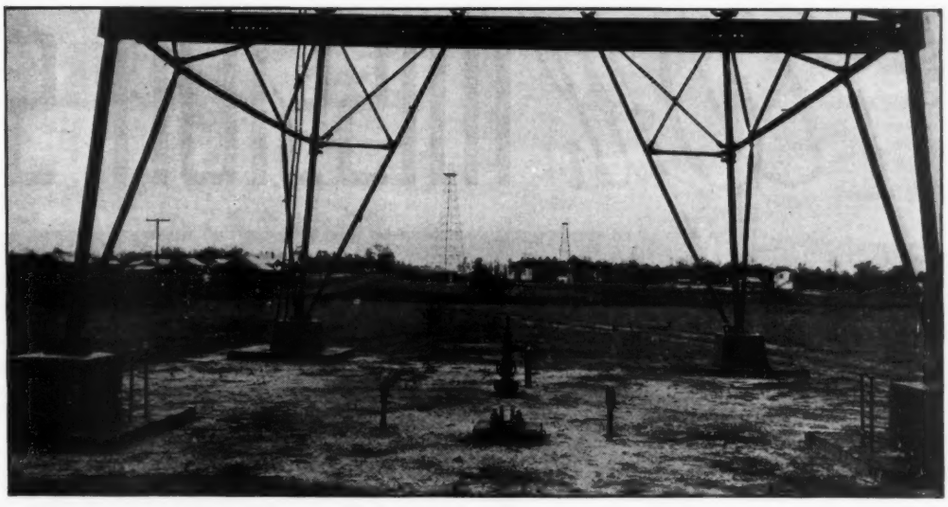


Close up of specially designed electric furnace used by research scientists of the United States Steel Corp. in creep test on steel specimens. A unique feature of this furnace is that creep test readings may be made by a single microscope, as a result of placing reference marks on tiny platinum cubes embedded in fingers attached to either end of the specimen in such a manner that both come within the vision range of the microscope. In addition, pinions alongside of the furnace make it possible to use a portable microscope. Heretofore, two microscopes, one focused on either end of a specimen, were the usual practice. An electrical outlet is also available at each furnace for plugging in the microscope light.

OPERATING IDEAS

Unusual Fuel-Tank Rack

A novel rack for holding a tank in which diesel fuel is held has been placed in use by a drilling contractor operating near Wichita Falls, Tex. The rack is constructed of 3- and 4-inch pipe welded into two sections. The top section slides over the lower section so that when it is necessary to load the tank on the truck for refilling, the upper section will be on level with the truck bed. When the rig is being moved the bottom section acts as a crate for the tool box and to hold the rig's portable lighting unit.

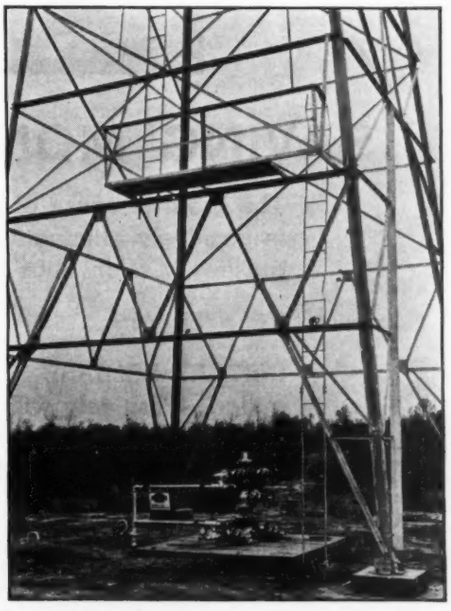


Wells Equipped for Future Clean-Out Jobs

When the concrete posts are poured for pumping derricks all auxiliary bracers, bolts, etc., that may ever be required in later well operations are being installed by far-sighted operators in the Lisbon field of northern Louisiana. Here is seen the bolts set in concrete for possible installation of bullwheels on workover jobs; two types of braces for portable pulling equipment; and in the two far corners of the derrick, tie-downs for any anchoring necessary of dead-end cables that are strung over the crown block

Reenforcing Welded Connections on Plant Manifold

A large oil company operating in the Tepetate field of Louisiana has found it necessary to use every precaution in reenforcing all welded connections of the manifold of its repressuring plant, due to the vibration caused by operating at high pressure. Large fins are welded at right angles to all welded connections, serving to support the welds and also bracing the piping to reduce vibration to a large extent. Without the extra supports at each joint the welds might vibrate loose. The fins are cut from scrap pieces of sheet steel.



Safety Platform for Derrick

To eliminate having to catwalk across the girth, as is the practice followed by most companies, a large operator in the Rodessa field of Louisiana has installed a safety platform on the second girth of all its pumping derricks. The ladder connects the ground ladder and the derrick ladder, thus making it convenient for the tubing and rod man to quickly descend the derrick. A railing of angle iron is placed around the outside of the platform as an added safety measure.

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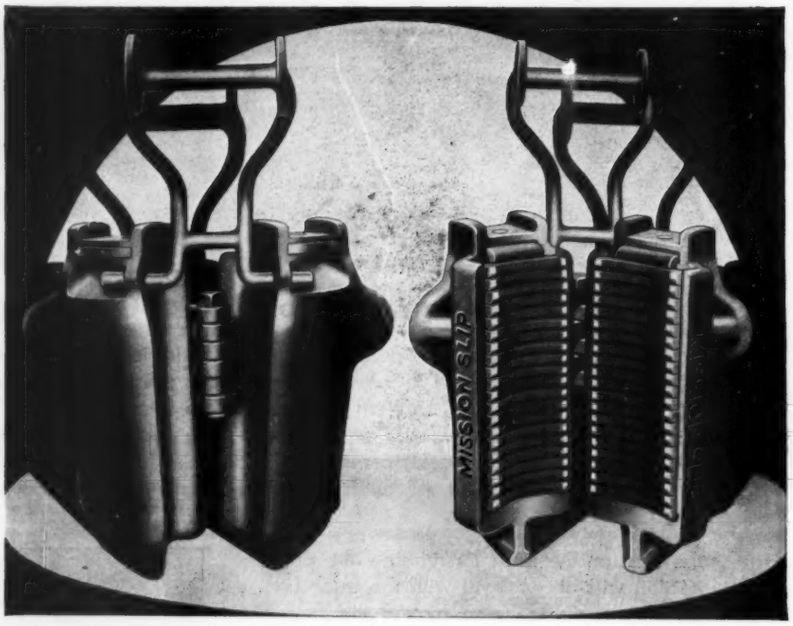

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The greatest cause of delays in handling pipe, namely, sticking in the bowl, is positively eliminated through that outstanding principle which distinguishes Mission Slips from all others: . . .

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INSTANT RELEASE is assured because the dogs roll from the pipe as it is pulled. **Positively will not damage pipe.**

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Effect of Carburetion and Manifolding on Fuel Knock Values

By EARL BARTHOLOMEW, HAROLD CHALK and BENJAMIN BREWSTER
Ethyl Gasoline Corp.*

During the past six years the development of laboratory testing methods to give knock ratings that correlate with the ratings obtained in cars on the road has been a major problem of the oil refiner and car manufacturer. After the cooperative road testing program at Uniontown, Pa., in 1932, a laboratory procedure was developed which gave ratings agreeing remarkably well with the road ratings. The ratings obtained on the road in the second Uniontown program in 1934 did not agree quite so well with ratings obtained by the Motor Method. Since that time road ratings have tended to deviate more and more from the consistent pattern which characterized the earlier ratings. This applies to average road ratings and particularly to ratings in individual cars. Fuels which have approximately the same Motor and Research Method ratings may have road ratings as much as

***S.A.E.*—Presented at Annual Meeting, Detroit, Mich., January 10-14, 1938**

8 octane numbers higher or lower than their laboratory ratings. Fuels which have a fairly large difference between their Research and Motor Method ratings may on the road show no appreciation over their Motor Method ratings and others having the same difference between their Research and Motor Method ratings in the laboratory may, under the same conditions of car operation, have road ratings considerably higher than their Research Method ratings.

As an example of such performance we may consider the ratings of two specially blended fuels whose road and laboratory ratings are tabulated in Table 1. . . .

Effect of Recent Changes in Engine Design and Fuel Refining

A study of similar data, obtained in numerous laboratories during the past three years, led to the suspicion that some factor or combination of factors, as yet neglected in the standard laboratory knock testing procedure, in some cases may have roughly as great an influence on road ratings as engine speed and temperature. Since the serious disagreement of road ratings and laboratory ratings made by the generally established procedures or simple variations thereof is of relatively recent origin, the changes in engine design which may account for such deviations are of immediate interest. The following seem to warrant attention:

1. Increased cross-sectional area of intake manifolds in conjunction with the general adoption of down-draft carburetors having larger tube diameters, resulting in considerably lower intake manifold velocities in the low-speed range of the engine, to which knocking is now generally confined.
2. The automatic choke.
3. Decreased mixture heating by the exhaust gases and the use of automatic heat-control valves whose operation is controlled largely by the temperature of the air surrounding the bi-metallic element.
4. The elimination of thermostatically controlled radiator shutters.

In addition to these engine design factors there is the possible effect of recent developments in gasoline production such as polymerization, reforming and new cracking methods. It is the purpose of this paper to review some of the recent work in the laboratories of the Ethyl Gasoline Corp., which has had for its purpose:

1. The explanation for at least some of the above-described unusual performance of fuels in cars on the road.
2. The development of improved instrumentation for the analysis of events in the intake manifold and cylinder.
3. The formulation of principles to govern the selection of fuels to meet best any given set of manifold and carburetion conditions.

The paper is designed to present fundamental principles that apply to a complex problem hence, in the interest of simplification, the discussion is confined in so far as possible to typical conditions to be met.

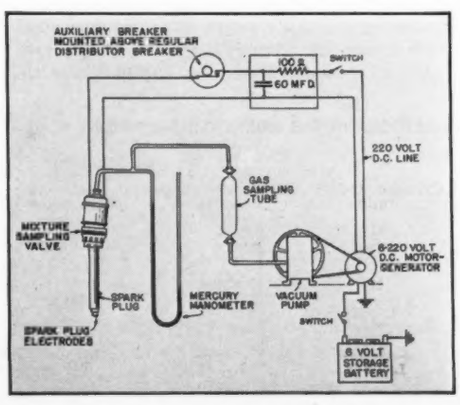

Fig. 2—Diagrammatic sketch of mixture sampling valve and associated equipment

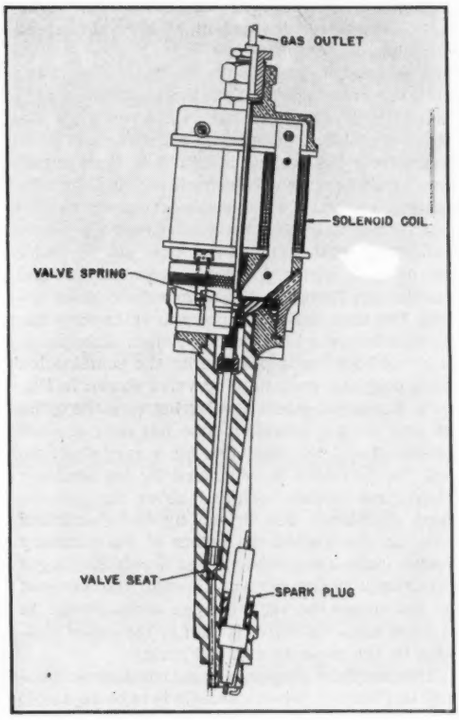

Fig. 1—Valve for sampling mixture in the cylinders of a multicylinder engine

Campbell, Lovell and Boyd† pointed to the probability that mixture ratio and fuel volatility affect the relative antiknock value of fuels and cited tests in cars on the road which appeared to confirm the hypothesis. The work in the laboratories of the Ethyl Gasoline Corp. indicates that fuel volatility, variation of fuel antiknock value with distillation temperature, carburetor air-fuel ratio, design of the intake manifold and associated parts, variation of other conditions which affect fuel distribution within the engine, and the reference fuels used all have an important bearing on the relative knock ratings of fuels.

TABLE 1—ROAD AND LABORATORY KNOCK RATINGS OF TWO SPECIALLY BLENDED FUELS

Fuel	Research method rating	Motor method rating	Average of winter road rating in 11 cars	Winter road rating in Car No. 155
S-6	72.9	75.6	71.4	67.6
S-11	71.7	73.8	74.8	80.0

Fuel Distribution Within the Engine

Fuel of substantially uniform composition is distributed to all the cylinders of a multicylinder engine in approximately equal proportions with the admixed air if the available heat, time of contact of air with fuel, and the agitation of the mixture are sufficient to vaporize the fuel completely and mix it homogeneously with the air or if the manifold velocity is high enough to carry the liquid fuel in the air stream by entrainment. High volumetric efficiency of automobile engines has been obtained only with reasonably low intake manifold velocity. The high brake mean effective pressures at high engine speed in recently built cars require the use of intake manifolds of large cross-sectional area and a minimum of mixture heating. Both of these design features are diametrically opposed to good fuel distribution at low car speeds where knocking has become most prevalent. It is impossible to combine in a single con-

*Presented under the author's title, "The Effect of Carburetion and Manifolding on the Relative Antiknock Value of Fuels in Multicylinder Engines."

†See S.A.E. Journal, April, 1937, pp. 14-148; "Relative Knocking Characteristics of Motor Fuels in Service."

ventional unsupercharged manifold the most satisfactory characteristics for both high- and low-speed operation.

The determination of the air-fuel ratios of the mixtures entering the individual cylinders of a multicylinder engine on the road has always presented a problem. Samples of exhaust gases withdrawn from the exhaust manifold as close as possible to the exhaust valves are invariably contaminated by products of combustion from other cylinders. The substitution for the conventional manifold of a separate exhaust stack for each cylinder destroys the standard hot-spot arrangement and considerably increases the temperature under the hood. The most desirable approach is the sampling of the mixture within each cylinder. This procedure has been made possible by the combination spark plug and gas sampling valve shown in Figure 1. The small solenoid valve between the cylinder and the gas sampling tube has only a small movement and remains open for a very short period. Its operation is controlled by an auxiliary breaker mechanism mounted above the conventional distributor and driven by the distributor shaft. At the instant the points of the auxiliary breaker close, a condenser in the circuit discharges a relatively heavy current through the solenoid coil and causes the valve to open momentarily. At all other times the valve is held in the closed position by the pressure of a coil spring.

The complete apparatus is shown diagrammatically in Figure 2. When a sample is to be obtained, the vacuum pump, which is driven by a motor which draws its current from a 6-220 volt motor-generator set, evacuates the gas sampling tube to an absolute pressure of about 5 mm. mercury. The car is accelerated under the conditions prevailing in the road knock test and the valve allowed to operate only within the 5 miles per hour speed range of maximum knock intensity. From 6 to 8 repetitions of the acceleration are required to fill the gas sampling tube to atmospheric pressure. The procedure is then repeated for the other cylinders.

TABLE 2—AIR-FUEL RATIOS OF THE MIXTURES IN THE CYLINDERS OF AN AUTOMOBILE ENGINE AT 10 TO 15 MILES PER HOUR

Atmospheric temperature, 56° F. fuel of winter volatility

Cylinder No.							
1	2	3	4	5	6	7	8
14.59	16.01	13.29	14.13	12.63	11.56	15.27	12.37

Average air-fuel ratio, all cylinders	13.6
Average for cylinders 1, 2, 7 and 8	14.4
Average for cylinders 3, 4, 5 and 6	12.8

Table 2 shows the air-fuel ratios for the individual cylinders of a certain car during acceleration at 10 to 15 miles per hour at an atmospheric temperature of 56° F., as determined by the apparatus shown in Figure 2. The mean air-fuel ratio computed from these data is shown, also the computed means for cylinder groups 1, 2, 7 and 8 and 3, 4, 5 and 6, each of which is fed by a single barrel of a dual down-draft carburetor.

For the same conditions of operation, the mean air-fuel ratio is normally richer than that shown in Table 2. There is, however, always a tendency for a portion of the heavy ends of the acceleration charge to lag behind the air-vapor mixture for a short period after the sudden opening of the throttle, with the result that the mean cylinder air-fuel ratio is momentarily leaner than after the lagging liquid fuel starts to flow into the cylinders. This may in part account for the difference between the mean air-fuel ratios for the two groups of cylinders in as much as the manifold for cylinders 1, 2, 7 and 8 is longer than that for the remaining cylinders and has more surface to be wet by the acceleration charge. It should be noted that the rear cylinder of each group receives the richest mixture, presumably because the forward motion of the car which tends to cause liquid fuel to accumulate in the rear of the manifolds.

The air-fuel ratio of the mixtures in cylinders 1, 2, 7 and 8 varies from 12.37 to 16.01. Often the variation is greater. The mechanism by which fuel and air are delivered to the cylinders in such a wide range of proportions appears to be as follows:

Air and fuel are metered by the carburetor and enter the manifold. The magnitude of the fraction of the fuel in the vapor state as the mixture leaves the manifold is a function of the heat in the fuel and air supplied to the carburetor, the heat added by the manifold, the volatility and latent heat of the fuel and the efficiency of mixing in the manifold. Although the available heat may be adequate to ensure complete vaporization under equilibrium conditions, the time of contact and degree of mixing in the manifold may not be sufficient to bring about this condition.

The air and the lighter fractions of the fuel, vaporized in the carburetor and manifold, are distributed substantially equally to the cylinders. A part of the unvaporized, less volatile portion is distributed fairly uniformly by entrainment with the air but the quantity of heavy ends so distributed becomes less as engine speed decreases and appears to be small at low engine speed.

The remainder of the heavy liquid portion is distributed unequally to the cylinders, the quantity entering any given cylinder depending on the shape, cross-sectional area and inclination of the manifold, engine speed, surging of the mixture within the manifold and other factors. Thus, in the three typical cases, one or more cylinders may receive substantially only air and the lighter ends which leave the manifold in the vapor state; others may receive air, vaporized light ends and liquid heavy ends in approximately the same air-fuel ratio as that of the mixture leaving the carburetor and still others may receive air, vaporized light ends and liquid heavy ends in the same proportions as in the second case plus the liquid heavy ends which, under conditions of perfect distribution, would have entered the first mentioned cylinder or group of cylinders. Other cylinders may receive liquid heavy ends in any amounts between the two limits just described and it would be possible for one or more cylinders to receive even more liquid heavy ends than the richest cylinder cited. The three typical distribution conditions are summarized in Table 3 in which the fuel entering the carburetor is assumed to contain L pounds of light ends, which leave the manifold in the vapor state, for each H pounds of heavy ends that leave the manifold in the liquid state.

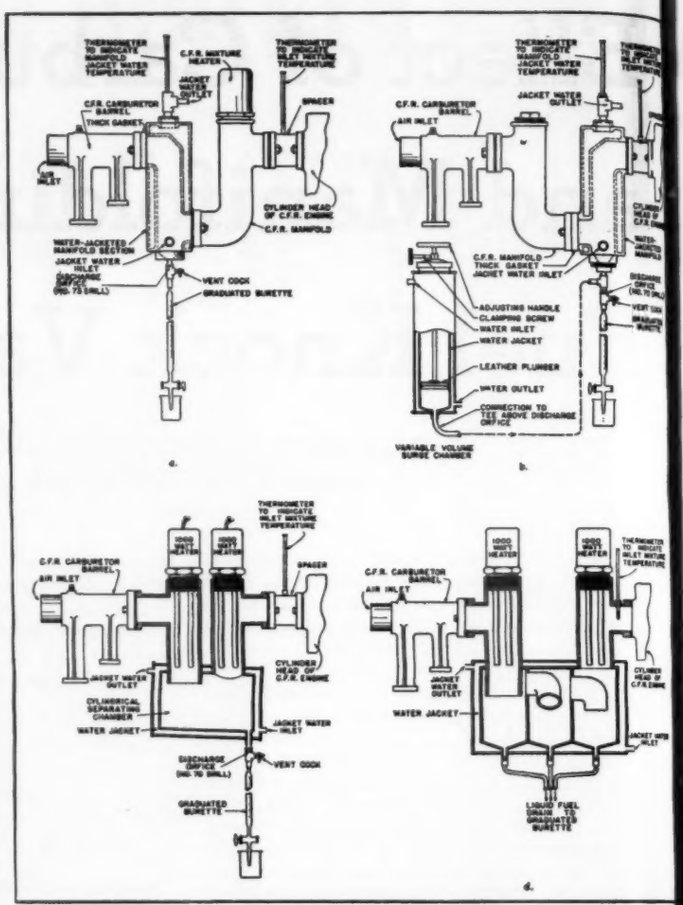

Fig. 3—Diagrammatic sketches of intake manifolds for the C.F.R. engine which simulate the effects of imperfect mixture distribution in the multicylinder engine

TABLE 3—THREE TYPICAL FUEL DISTRIBUTION CONDITIONS IN THE MULTICYLINDER ENGINE

Cylinder type	Air received by cylinder (lbs.)	Vaporized light ends received by cylinder (lbs.)	Liquid heavy ends received by cylinder (lbs.)	Cylinder air-fuel ratio	Carburetor air-fuel ratio	Cylinder mixture strength relative to carburetor
A	M	L	O	$\frac{M}{L}$	$\frac{M}{L+H}$	Leaner
B	M	L	H	$\frac{M}{L+H}$	$\frac{M}{L+H}$	Equal
C	M	L	2H	$\frac{M}{L+2H}$	$\frac{M}{L+H}$	Richer

$$\text{Mean air-fuel ratio} = \text{carburetor air-fuel ratio} = \frac{1}{\frac{L}{M} + \frac{L+H}{M} + \frac{L+2H}{M}} = \frac{M}{L+H}$$

Assume for example in the case of cylinder group 1, 2, 7 and 8 of the engine in Table 2 that the average cylinder air-fuel ratio was equal to the carburetor air-fuel ratio, that no liquid fuel was distributed by entrainment and that the leanest cylinder received only vaporized fuel, in an amount equal to that distributed to each of the remaining cylinders, along with varying amounts of liquid fuel. The fraction of the fuel entering cylinders 1, 2, 7 and 8 which left the manifold in the vapor state was $100 \times \frac{14.4}{16.01} = 90.0$ per cent. If M in Table 3 is taken as 1 lb., (L+H) for cylinders 1, 2,

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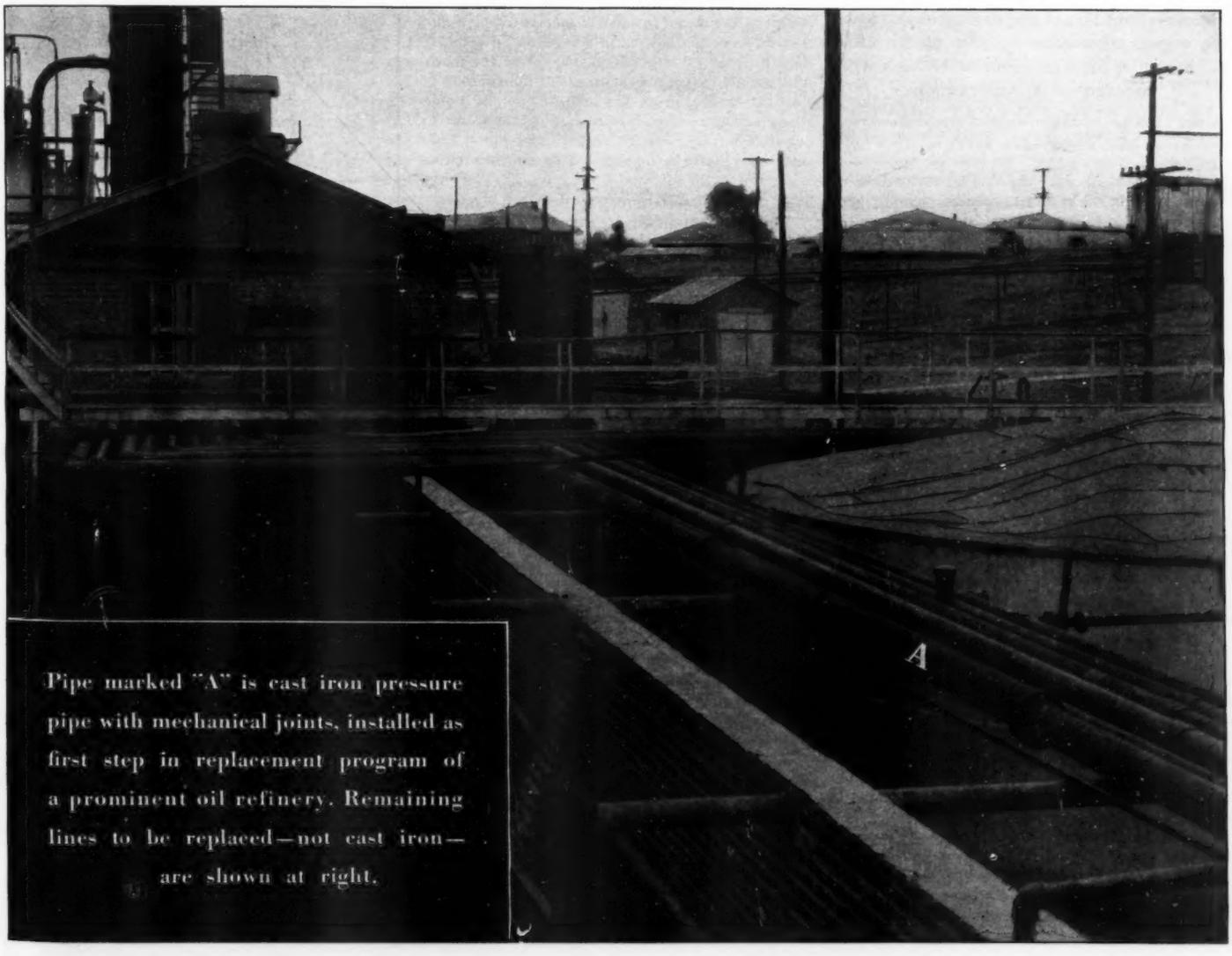


Pipe marked "A" is cast iron pressure pipe with mechanical joints, installed as first step in replacement program of a prominent oil refinery. Remaining lines to be replaced—not cast iron—are shown at right.

7 and 8 was $\frac{1}{14.4} = 0.0695$ lb. L was $\frac{1}{16.01} = 0.0625$ lb. H was $0.0695 - 0.0625 = 0.0070$ lb. $\frac{M}{L + 2H} =$ 13.08, which is the air-fuel ratio that would have existed in one or more of the cylinders if they had received air and fuel in the same proportions as cylinder C of Table 3. Actually no cylinder in this group received such a mixture but cylinder 8 received a mixture having an air-fuel ratio of 12.37, or 0.0809 lb. fuel per pound of air, consisting of L pounds of vaporized light ends and 2.63 H pounds of liquid heavy ends.

Effect of Variable Fuel Distribution on Knocking in the Cylinder

The nonuniform distribution of fuel to the cylinders as described gives rise to two conditions which are of vital importance in the fuel

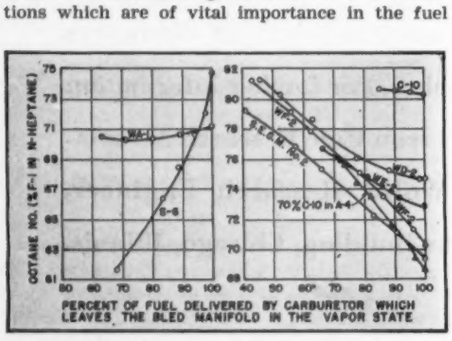


Fig. 4a—Variation of the antiknock value of the vaporized portion of four of the 1937 C.F.R. winter fuels and four other fuels with the degree of vaporization

C.F.R. engine, special manifold (Figure 3c). Cylinder air-fuel ratio for maximum knock. Temperature mixture entering cylinder, 220° F. Spark advance, 18 degree. Engine speed, 600 r.p.m.

knocking problem, viz: (1) The air-fuel ratios of the mixtures in the cylinders may vary widely and cause a substantial variation in knocking tendency among the cylinders. (2) The composition of the fuel in the cylinders may be quite different and cause a variation in knocking tendency in addition to that introduced by the differences in air-fuel ratios.

Because of these conditions, independent of all others, there is ample cause for a marked variation in the knocking tendency of the fuel in the individual cylinders of an engine operated under conditions of imperfect distribution. Whether the cylinders of Type A, B or C have the greatest knocking tendency depends on the following three factors:

1. The carburetor air-fuel ratio.
2. The degree of vaporization and hence the magnitude of the variation in cylinder air-fuel ratio.
3. The relative concentration of antiknock value in the vaporized light ends and the unvaporized heavy ends of the fuel.

Adaptation of the Single-Cylinder Engine for the Study of Distribution

The laboratory knock-testing engine, operated in the conventional manner, permits no prediction of the behavior of a fuel under variations of the three conditions just enumerated. Under such a procedure it is useful only for the evaluation of the knocking tendency of a fuel under a range of cylinder conditions when the composition and air-fuel ratio of the mixture entering the cylinder are the same as for the mixture leaving the carburetor.

A fundamental study on a multicylinder engine of fuel distribution and its effect on knocking is surrounded by many difficulties. The richness of the mixture which enters the several cylinders can be determined most conveniently by exhaust gas analysis as previously described. The knocking tendency of the fuel in the individual cylinders is not measurable by any instrumentation developed to date but can be evaluated by audibility methods to be described later. The maintenance of constant conditions of operation is difficult because of uncontrollable variations in ignition timing and temperatures. It is, therefore, highly desirable to adapt the C.F.R. engine to the study of this problem in as much as the above-mentioned variations in operating conditions have been minimized.

Figure 3 shows four intake manifolds for the C.F.R. engine which have been designed to permit a study, under controlled conditions, of the effects on knocking caused by variations of fuel distribution in the multicylinder engine. In the arrangement shown in Figure 3a, a short spacer bolted directly to the engine cylinder is fitted with a thermometer for the indication of mixture temperature. A standard C.F.R. manifold, with its mixture heater, is bolted to the spacer, the flange normally bolted to the carburetor being attached to the spacer. A specially designed water-jacketed manifold section is provided with two flanges, one of which is connected to the standard C.F.R. manifold and the other to the standard C.F.R. carburetor body. . . .

The arrangement shown in Figure 3b has been found to effect a more complete separation of liquid fuel from the mixture of air and vaporized fuel and thus to simulate more closely the functioning of the multicylinder engine manifold. Essentially it is the setup shown in Figure 3a with the regular C.F.R. manifold and special jacketed section reversed in position. Variation in the position of the piston in the surge cylinder attached to the liquid fuel drain at the bottom of the manifold permits, with little or no application of heat to the manifold, a wide range of adjustment of the fraction of the fuel drained from the manifold in the liquid state. It is impossible, however, to obtain with this manifold a final mixture temperature higher than that of the liquid in the jacket. This prevents operation with cylinder conditions having a severity much in excess of those for the Research Method.

The manifold shown in Figure 3c permits the use of any desired final mixture temperature higher than approximately 200° F., effects as good separation of vaporized and liquid fuel as the manifold shown in Figure 3b and requires no surge chamber. The separating chamber has a cross-sectional area over four times as great as that of the remainder of the manifold and consequently reduces the velocity of flow to a point that ensures good separation of liquid fuel from the stream of air and vaporized fuel. Heat may be applied to the mixture by conventional immersion heaters before or after it enters the separating chamber and the chamber itself may be heated or cooled by the circulation of water through the surrounding jacket.

The manifold of Figure 3d is of the same essential design as that of Figure 3c but is provided with three separating chambers instead of one. Experience to date with this design is insufficient to indicate whether it possesses any significant advantage over that shown in Figure 3c.

Since provision is made for the measurement of air and fuel delivered to the carburetor and the unvaporized fuel bled from the manifold, it is possible to compute the air-fuel ratios of the mixtures leaving the carburetor and of those entering the cylinder. When unvaporized fuel is withdrawn from the manifold, the mixture entering the cylinder is leaner than that leaving the carburetor and the distribution condition is that of cylinder A in Table 3. When no unvaporized fuel is bled from the manifold, the cylinder and carburetor air-fuel ratios are equal and the distribution condition is that of cylinder B in Table 3.

The distribution condition of cylinder C in Table 3 is duplicated on the single cylinder engine by running first under the conditions of cylinder A and collecting H pounds of unvaporized heavy ends. . . .

Knock Ratings With the Bled Manifold

After the carburetor float level and manifold jacket temperature have been adjusted to give the desired carburetor and cylinder air-fuel ratios respectively and the final mixture temperature has been brought to the desired figure, the general procedure for making knock ratings with the modified manifold is the same as for the motor method. The compression ratio is adjusted for standard knock intensity and the bouncing pin indicator is used to measure knocking tendency. . . . .

Distribution of Antiknock Value Through the Distillation Range of the Fuel

It has been stated previously that the relative knocking tendency of the lean, normal and rich cylinders (denoted by A, B and C respectively in Table 3) depends on the carburetor air-fuel ratio, the degree of vaporization in the carburetor and manifold and the relative concentration of antiknock value in the vaporized light ends and unvaporized heavy ends of the fuel. The distribution of antiknock value through the distillation range may be measured by separating the fuel into a number of cuts by distillation and determining the octane

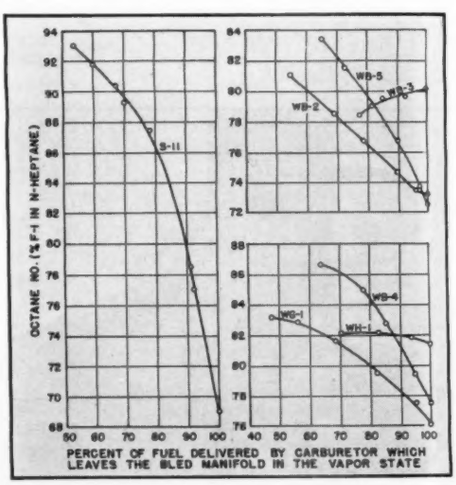


Fig. 4b—Variation of the antiknock value of the vaporized portion of six of the 1937 C.F.R. winter fuels and one other fuel with the degree of vaporization

C.F.R. engine, special manifold (Figure 3c). Cylinder air-fuel ratio for maximum knock. Temperature mixture entering cylinder, 220° F. Spark advance, 18 degree. Engine speed, 600 r.p.m.

number of each by any of the conventional knock testing methods. The most volatile fractions have the highest antiknock value and the heavier cuts progressively lower octane number.

Such a procedure is time consuming and not required for the determination of the distribution of antiknock value within the practical limits of interest. A more convenient method is to effect the distillation and measure antiknock value simultaneously in the engine itself. Figures 4a and 4b show the octane numbers of a number of cuts of the 1937 C.F.R. preferred winter road test fuels and of five other fuels. The cuts were made by varying the degree of vaporization in the manifold and in each case included the most volatile fractions of the fuel. All ratings were made at the air-fuel ratio for maximum knock. The curves are stopped at approximately the 50 per cent vaporization point for the least volatile fuels in as much as this appears to represent roughly the extreme condition to be met on the road.

Fuels may be separated roughly into three broad

classes in accordance with the distribution of antiknock value along their distillation curves, as follows:

1. Those whose cuts by simple distillation from the 50 to 100 per cent points have approximately the same antiknock value as the first 50 per cent cut, as for example fuel WA-1 in Figure 4a.

2. Those whose cuts by simple distillation from the 50 to 100 per cent points have constantly increasing antiknock value illustrated by specially blended fuel S-6 in Figure 4a.

3. Those whose cuts between the 50 and 100 per cent points have constantly decreasing antiknock value, such as fuel WG-1 of Figure 4b.

Among commercial lead-free fuels, those of the third class are by far the most numerous, however, the degree of concentration of antiknock value in the light ends, although variable, never approaches that of specially blended fuel S-11 referred to herein. Commercial lead-free fuels of the first class are encountered occasionally and fuels of the third class may be changed, by the addition of tetraethyl lead, to have the characteristics of those of the first class. Those in the second class are not available commercially but may be made for research purposes by careful blending of selected components.

Variation of Cylinder Air-Fuel Ratio

It has been pointed out in Table 3 that imperfect distribution causes some cylinders of the multicylinder engine to receive mixtures richer and leaner respectively than that leaving the carburetor while others may receive a mixture having substantially the same composition and air-fuel ratio as that leaving the carburetor. In as much as the knocking tendency of the fuel in the cylinder is influenced markedly by air-fuel ratio as well as by the composition of the fuel, it is interesting to investigate the combined effect of these two variables resulting from imperfect distribution of the fuel in the multicylinder engine. It is possible to predict for any given fuel the relative knocking tendency of the several cylinders by the construction of any one of a number of different charts, after a series of tests of the fuel made on a C.F.R. engine equipped with one of the manifolds shown

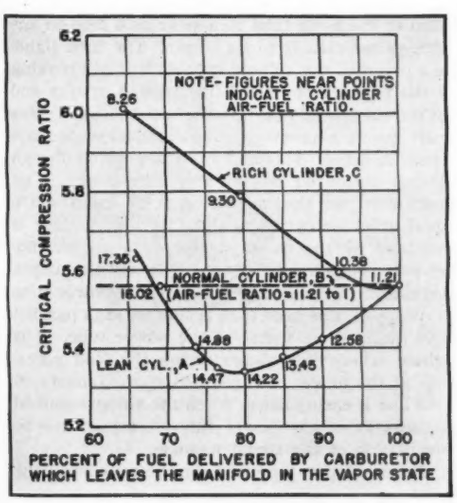


Fig. 5—Effect of unequal distribution of the fuel in the manifold on the critical compression ratios of the individual cylinders of an engine. Typical commercial lead-free base stock. Air-fuel ratio at the carburetor, 11.21

in Figure 3. The type of chart which is most satisfactory depends on the information desired.

In as much as the most frequent problem is the prediction of the relative knocking tendency of a group of fuels in a single car under a given set of conditions, the most valuable type of chart is usually one constructed on the basis of constant carburetor air-fuel ratio. The chart of Figure 5 is constructed at a carburetor air-fuel ratio of 11.21 for fuel S.E.G.M. No. 2 which is a typical commercial, regular grade, lead-free base gasoline comprising a mixture of straightrun and cracked stocks. The scale of ordinates is critical compression ratio, defined as the compression ratio required for a knockmeter reading of 50. The scale of abscissae is the per cent of the fuel delivered by the carburetor which leaves the manifold in the vapor state.

Data for the construction of the curve for cylinder A are obtained by operating the engine at the desired speed, spark advance and final mixture temperature and, by adjustment of manifold temperatures, varying the per cent of the fuel delivered by the carburetor which is bled from the manifold in the liquid state. The compression ratio for a knockmeter reading of 50 is determined for each rate of fuel bleeding and the curve is drawn through the points so determined. If the air and fuel passing through the carburetor and the liquid

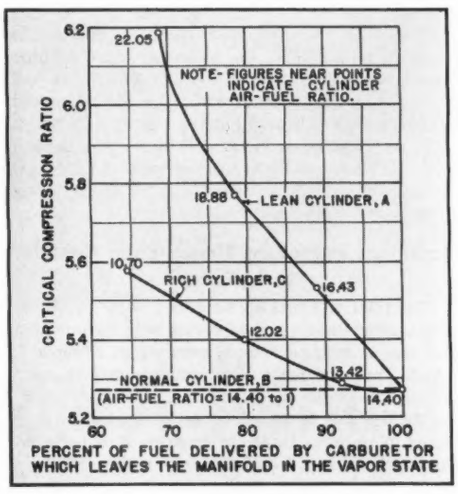


Fig. 6—Effect of unequal distribution of the fuel in the manifold on the critical compression ratios of the individual cylinders of an engine. Typical commercial lead-free base stock. Air-fuel ratio at the carburetor, 14.40 (maximum knock)

fuel bled from the manifold are measured, it is possible to compute the air-fuel ratio of the mixture which enters the cylinder. This information is shown beside some of the data points in Figure 5.

The air-fuel ratio and composition of the mixture in cylinder A under the condition of complete fuel vaporization would apply to the normal cylinder B of the multicylinder engine regardless of the degree of fuel vaporization in the manifold. The curve for cylinder B therefore is a straight line, parallel to the horizontal axis, and intersecting the curve for cylinder A at the 100 per cent vaporization point.

It will be recalled that cylinder C of Table 3 receives a normal charge plus the liquid heavy ends which, under conditions of perfect fuel distribution, would have entered cylinder A. Data for the construction of the curve for cylinder C are determined in the manner previously described. When vaporization is complete in the manifold, H becomes zero and the curve for cylinder C has a point in common with the curves for cylinders A and B.

Figure 4a shows that the lighter fractions of fuel S.E.G.M. No. 2 have the higher antiknock value, nevertheless, Figure 5 indicates that under conditions of imperfect fuel distribution at a carburetor air-fuel ratio of 11.21, cylinder A which

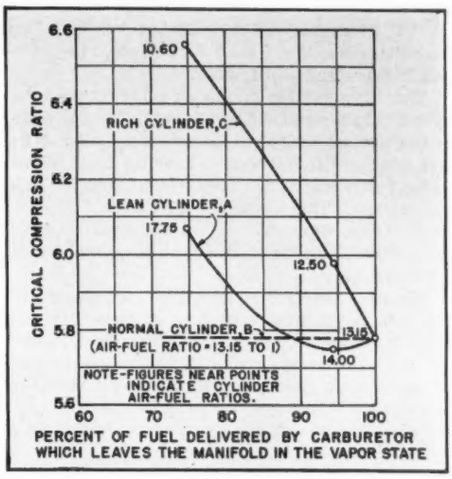


Fig. 7—Effect of unequal distribution of the fuel in the manifold on the critical compression ratios of the individual cylinders of an engine. Fuel S-6, winter volatility, extreme concentration of antiknock in heavy ends. Air-fuel ratio at the carburetor, 13.15 (maximum knock)

receives the fuel of highest inherent antiknock value has the greatest knocking tendency of the three cylinders when 69 to 100 per cent of the fuel leaves the manifold in the vapor state. Furthermore, cylinder C which receives fuel having the lowest inherent antiknock value has the least tendency to knock. As the degree of vaporization decreases, the air-fuel ratio of cylinder A decreases from 11.21 toward the maximum knock air-fuel ratio and this change in air-fuel ratio has a greater influence on the knocking tendency of the fuel in the cylinder than the increase in the inherent antiknock value of the fuel fraction itself. Similarly, the richening of the mixture in cylinder C under the same conditions has a greater effect on the knocking tendency of the fuel in this cylinder than the decrease in the inherent antiknock value of the fuel.

The fuel and conditions illustrated in Figure 5 are those of commercial interest. As a matter of academic interest, and to provide a more complete background for the fuel distribution problem, Figures 6 and 7 have been prepared. Figure 6 is constructed for fuel S.E.G.M. No. 2 illustrated in Figure 5 but at the carburetor air-fuel ratio for maximum knock. A full-throttle setting so lean is not used in cars because of the resultant loss of power at all speeds and uneven operation at low speeds. The carburetor condition illustrated in Figure 7 is in the normal range but the fuel for this figure is a specially blended extreme type, not representative of commercial gasoline.

Figure 6 is similar to Figure 5 in all respects except that the carburetor air-fuel ratio is the maximum knock ratio for fuel S.E.G.M. No. 2. At this carburetor setting the air-fuel ratio for cylinder A becomes leaner than that for maximum knock as the degree of fuel vaporization is decreased. Simultaneously the inherent antiknock value of the fuel in the cylinder increases. The result is a marked rate of increase in critical compression ratio as the degree of vaporization decreases.

Under the same conditions, the air-fuel ratio of the mixture in cylinder C becomes richer than that for maximum knock and for this reason the fuel tends to knock less. At the same time, however, the inherent antiknock value of the fuel decreases. The result of these two opposed tendencies is that as the degree of vaporization decreases the knock-

ing tendency of cylinder C at first remains close to that of normal cylinder B but becomes less than that for cylinder B as the degree of vaporization is decreased still further.

The differential in antiknock value between the light and heavy ends of fuel S.E.G.M. No. 2 is within the normal range for commercial fuels. Fuel S-11 was specially blended to have light and heavy ends of extremely high and low antiknock value respectively. This abnormal distribution of antiknock value through the fuel fractions reverses the relative knocking tendency of the rich and lean cylinders. . . .

Figure 7 shows that when the carburetor air-fuel ratio for fuel S-6 is that for maximum knock, the lean cylinder A has a slightly greater tendency to knock than the normal cylinder B when the rate of vaporization is between 90 and 100 per cent but that cylinder B knocks most at lower rates of vaporization. The effect of carburetor air-fuel ratio is quite pronounced for this fuel.

Fuels of commercial interest have a distribution of antiknock value along their distillation curves which lies between but does not approach that for fuel S-6. A study of the chart for this fuel, together with those for fuel S.E.G.M. No. 2, should permit a prediction of the behavior of fuels having various degrees of concentration of antiknock value in the light and heavy ends.

Some mention should perhaps be made of a hypothetical fuel, all of whose fractions have equal inherent antiknock value. The knocking tendency of the fuel in any cylinder would depend only on the air-fuel ratio with respect to that for maximum knock. At the carburetor air-fuel ratio for maximum knock, the normal cylinder B would have the greatest knocking tendency, regardless of the degree of vaporization. At a normal carburetor air-fuel ratio, which would be richer than that for maximum knock, the knocking tendency of cylinder C would decrease with a decrease in the rate of vaporization while cylinder A would knock increasingly more as its air-fuel ratio approached that for maximum knock. . . . .

The relative efficiency of heat, in vaporizing the fuel, when applied to the carburetor air and to the mixture through a hot spot immediately becomes of much interest. Figure 8 shows diagrammatically a modified single cylinder engine intake manifold, together with associated equipment, designed for a study of these effects. The manifold has a long horizontal section of a U-bend, the latter being provided with an opening through which liquid fuel flows to a graduated burette. After flowing downward through the vertical carburetor, the fuel and air mixture is forced to turn a corner. Directly under the carburetor is the electrically heated hot spot against which liquid fuel impinges as it turns the corner.

A section of the manifold is surrounded by a jacket through which water of varying temperature may be circulated for heating of the mixture. Air for the carburetor is supplied by an air conditioner which is capable of delivering air having a range of temperature and humidity.

Figure 9 shows for one commercial gasoline the relation between temperature of the mixture entering the cylinder and the degree of fuel vaporization when the heat is supplied alternately to the carburetor air and to the hot spot. Between the limits of no heat applied to the hot spot and complete vaporization of the fuel by either method of heating, the mixture at any temperature leaving the manifold contains a greater fraction of the fuel delivered by the carburetor when the heating is done by the hot spot. For example, at a final mixture temperature of 85° F., 88 per cent of the fuel passes into the cylinder with the air when the carburetor air is heated but the quantity increases to 94 per cent when the heat is applied by the hot spot. Similarly, complete vaporization of the fuel is accomplished at a lower mixture temperature in the case of hot spot heating.

Variations in Ignition Timing From Cylinder to Cylinder

The relative knocking tendency of the cylinders of a multicylinder engine varies with carburetion and fuel distribution, as illustrated in Figures 5, 6 and 7, provided that spark advance and cylinder cooling are uniform. Because of the longer cylinder jackets and better direction of flow of cooling water in recently built car engines, it is believed that variations in knocking among the cylinders due to differences in cooling have in general been minimized. Variations in spark advance appear to create a greater problem. For example, the leanest cylinder may have the greatest knocking tendency because of partial fuel vaporization and imperfect distribution, as illustrated in Figure 5. If, however, the spark advance in this cylinder during knocking is retarded relative to that in the other cylinders, the most pronounced knock may occur in some other cylinder. In any study of the effects of fuel distribution it is desirable therefore to be able to measure the ignition advance in each cylinder simultaneously.

Figure 10 shows a recently developed instrument for this purpose. A drum weighing 20 pounds and designed to hold a strip of 35 mm. cinema film on its outside surface is driven at a constant speed

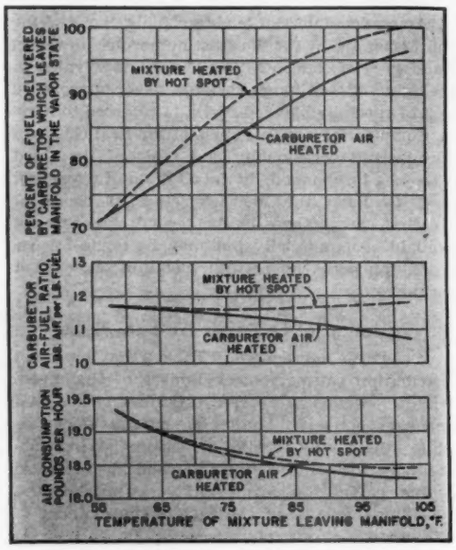


Fig. 9—Effect of hot spot mixture heating and carburetor air heating on the vaporization of fuel in the manifold

Series 30B engine with special manifold and equipment of Figure 8. Fixed engine speed, 900 r.p.m.

of 75 r.p.m. by a 6-volt electric motor. A neon tube is enclosed in a small light-tight box which is quite close to the drum. A narrow slot in the box, parallel to the axis of the film drum, permits the flash of the neon tube to appear as a line on the film, perpendicular to its length. The tube lights as a result of the voltage induced by the breaking of the primary circuit of the ignition system and by the motion of two flywheel studs, 180 degrees apart, past a magnetic pickup mounted on the flywheel housing. The pickup is similar in design to that employed by the Chrysler Corp. in its instrument for the measurement of mean spark advance in the cylinders. The induced voltage is amplified by the triode section of a duplex diodetriode vacuum tube (Type 6R-7) and the amplified output is coupled to the grid of a power tube (Type 6A-3). The neon tube is connected in parallel with the load resistance of the power tube. It is lighted when the voltage across the load resistance of the power tube rises to approximately 90 volts and is extinguished when the voltage applied to the grid of the power tube decreases due to termination of the signal impulse.

The oscillatory impulse from the primary of the ignition coil due to the opening of the breaker points is rectified and amplified in the Type 6R-7 tube and applied to the grid of the power tube, producing a flash of the neon tube and a mark on the film for the firing of each cylinder. A portion of the high voltage impulse to No. 1 spark plug is amplified and applied to the grid of the power tube, resulting in a flash of longer duration which identifies the film mark for No. 1 cylinder. One revolution of the film drum covers a number of complete engine cycles. A ratchet type relay limits the exposure to one revolution of the film drum.

Ignition timing of the individual cylinders is

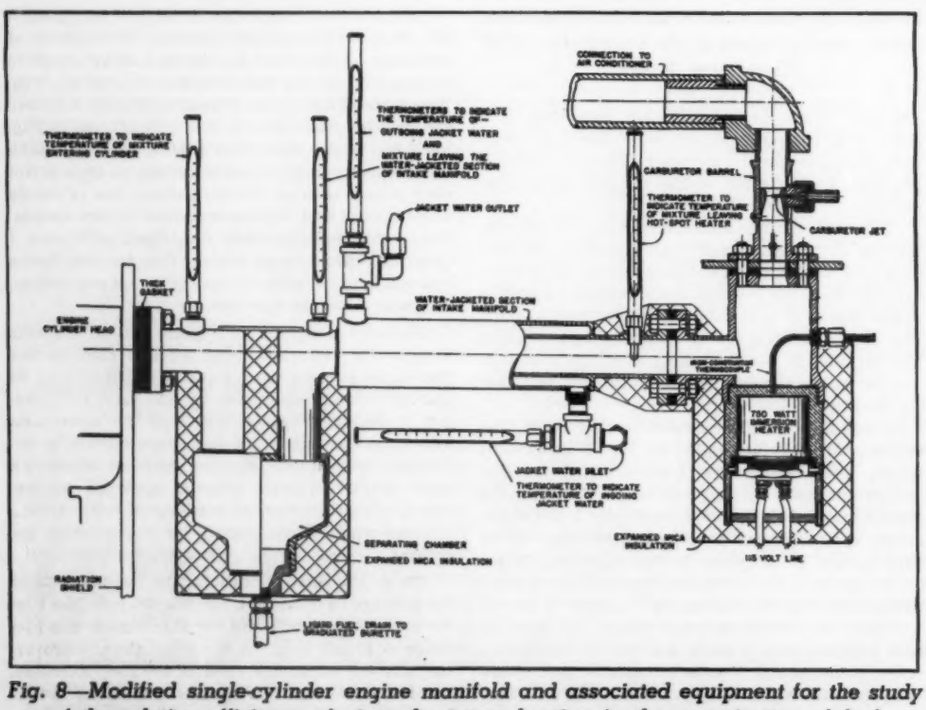

CONNECTION TO AIR CONDITIONER
THERMOMETERS TO INDICATE THE TEMPERATURE OF—
OUTGOING JACKET WATER AND
MIXTURE LEAVING THE WATER-JACKETED SECTION OF INTAKE MANIFOLD
THERMOMETER TO INDICATE TEMPERATURE OF MIXTURE ENTERING CYLINDER
JACKET WATER OUTLET
CARBURETOR BARREL
THERMOMETER TO INDICATE TEMPERATURE OF MIXTURE LEAVING HOT-SPOT HEATER
CARBURETOR JET
THICK GASKET
ENGINE CYLINDER HEAD
WATER-JACKETED SECTION OF INTAKE MANIFOLD
750 WATT IMMERSION HEATER
JACKET WATER INLET
THERMOMETER TO INDICATE TEMPERATURE OF INCOMING JACKET WATER
SEPARATING CHAMBER
EXPANDED MICA INSULATION
EXPANDED MICA INSULATION
115 VOLT LINE
RADIATION SHIELD
LIQUID FUEL DRAIN TO GRADUATED BURETTE

Fig. 8—Modified single-cylinder engine manifold and associated equipment for the study of the relative efficiency of air and mixture heating in the vaporization of fuel

Marshalled Against Refinery Tube Waste

Here are a few TIMKEN Refinery Tubes ready to go into action against elevated temperatures, creep, oxidation, corrosion and other enemies of tube life and operating economy.

GOOD WILL BASED ON GOOD STEEL

Everyone of these tubes has already come through one tough trial—the stiffest quality control system ever devised—and can, therefore, be counted upon to face the supreme test of the still, heat exchanger or condenser with the odds decidedly in its favor.

With TIMKEN Tubes fighting your battles your refinery tube troubles will be over.

There is a grade for every operating condition or combination of conditions. We will gladly recommend the grade or grades best suited to your needs.

TIMKEN STEEL AND TUBE DIVISION

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; Timken Rock Bits; and Timken Fuel Injection Equipment.

TIMKEN

SEAMLESS STEEL TUBES

read from a curve of angular displacement of the crankshaft versus time, obtained from the flywheel reference points.

The knocking tendency of the individual cylinders of a car engine may be determined by the aid of the auxiliary breaker used with the gas sampling valve as shown in Figure 2. When the knocking of No. 1 cylinder is to be measured, the regular distributor is retarded and the auxiliary breaker is set to produce a timing in No. 1 cylinder which is the same as that given by the regular distributor when properly adjusted. After the knocking tendency of No. 1 cylinder has been measured, the auxiliary breaker is used to produce the correct ignition timing in cylinder No. 2, and so on for the remainder of the cylinders. Since the auxiliary breaker is mounted on the same shaft as the regular breaker, it duplicates the advance characteristics of the regular breaker. . . . .

Correlating Road and Laboratory Ratings

The correlation of laboratory with road knock ratings creates two distinct and basically different problems, viz: (1) Reproducing on the laboratory engine the conditions of operation of a single car engine in a single test. (2) Determining a laboratory procedure which gives ratings that agree in so far as possible with the averages of ratings obtained in a group of cars under one or more conditions of test.

The first is by far the most simple. If every variable of engine operation such as mixture and cylinder temperatures, spark advance, speed, fuel composition and mixture ratio, applicable to the knocking cylinders of the multicylinder engine is duplicated on the laboratory engine, the ratings of all types of fuels should be duplicated, provided of course that the same fuels are used in both cases.

If partial fuel vaporization in the intake manifold of the car engine gives rise to differential distribution of unvaporized liquid fuel which in turn causes a cylinder richer or leaner than the normal cylinder to have the greatest knocking tendency, the knock ratings in the car engine of a wide variety of fuels cannot be duplicated on the laboratory engine unless provision is made for the simulation of the mixture distribution of the multicylinder engine by some means such as that described herein. A fortuitous compensation for the effects of mixture distribution may be made for a limited number of fuels by changes in other engine variables but such an arrangement is almost certain to fail when applied to a large group of fuels.

A modification of the conventional laboratory knock testing procedure by the substitution of a manifold designed to simulate the action of the intake manifold of the car under consideration should go a long way toward explaining the anomalous behavior of fuels observed in a single car.

Before an attempt is made to duplicate on the laboratory engine the rating obtained on a given car, it is believed advisable to construct a chart similar to Figure 11 in which air-fuel ratio, spark advance and cylinder knock intensity are plotted against cylinder number. Such a chart not only indicates the cylinder of greatest knocking tendency and its air-fuel ratio, but furnishes the data required for the computation of average air-fuel ratio and the degree of vaporization. The information on ignition timing may serve to explain the greatest knocking tendency of one cylinder when under conditions of uniform ignition timing the laboratory engine indicates that a cylinder having a different mixture condition should knock most.

The second problem, that of finding a set of operating conditions for the laboratory engine which gives ratings that agree with the average of ratings in a group of cars, is quite different. The average road ratings reflect the results of the simultaneous operation of a host of variables combined differently in each car. Considering alone those variables which arise through variations in carburetion and fuel distribution in the engine, it is obvious that a fuel might be rated on one car under conditions of substantially perfect distribution and at an air-fuel ratio near that for maximum knock while in another car distribution might be equally good but the air-fuel ratio in all cylinders might be considerably richer than that for maximum knock. In a third car with imperfect fuel distribution the rating might be determined by the behavior of the portion of the fuel leaving the manifold in the vapor state and burned at the air-fuel ratio for maximum knock. The list of possibilities is far from exhausted when it becomes apparent that no single set of carburetor and manifold conditions for the laboratory engine theoretically should give ratings equal to the average of ratings obtained on several cars having a wide variation of carburetion and manifold conditions.

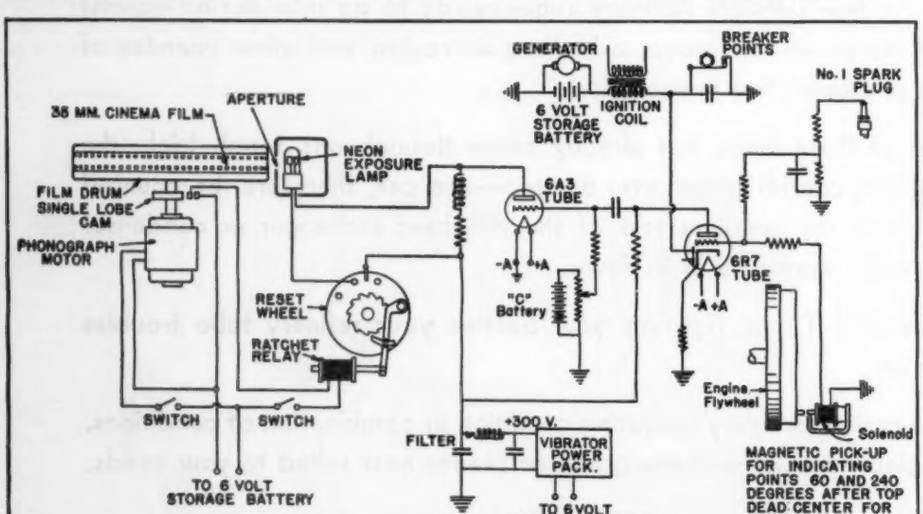


Fig. 10—Diagrammatic sketch of an instrument for recording on cinema film the ignition timing in the individual cylinders of a multicylinder engine

Notwithstanding this situation, definite and consistent effects of nonuniform fuel distribution are now apparent in any fuel knock rating data obtained on a group of cars. One of the most impressive demonstrations of the importance of this variable was furnished by a series of road tests in which the 12 test fuels were specially blended to have an extreme concentration of antiknock value in different portions of the distillation range. Fuels S-6 and S-11, were two of the test fuels.

After the effects of imperfect fuel distribution within the engine have been found to exist, the problem of most immediate interest is the development of some means for the correction of variations in the road rating of fuels, rated as equal by present laboratory methods, due to this variable. The British have for some time used a correction factor for benzol blends. For the first 30 per cent total aromatics in any gasoline, one octane number is added to the conventional laboratory rating and for each additional 15 per cent aromatics another octane number is added. A correction factor applicable to all types of fuels and capable of direct determination on the engine would be desirable.

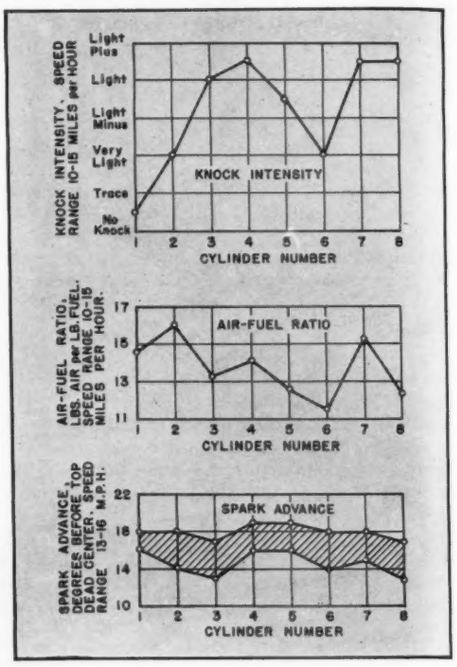


Fig. 11—Variation of air-fuel ratio, spark advance, and knock intensity among the cylinders of an automobile engine in the speed range of maximum knocking

It is to be hoped that automotive engineers will be able to find a not too expensive means for minimizing variations in fuel distribution at low engine speeds. In the meantime the oil refiner will undoubtedly make an effort to correct, by some change in the laboratory knock testing procedure, present inequalities in the road performance of fuels of equal octane number arising because of the mixture distribution problem.

The addition of concentrated knock suppressors to fuels may change the distribution of antiknock value through the fuel fractions. The choice of antiknocks to meet the wide range of conditions resulting from variations in carburetion and manifolding is a complex problem in itself.

Tankships Increasing in Size

Some 65 years ago the first sailing ship tanker carrying petroleum products in bulk went into service. She transported 7,000 bbls. of oil in wooden casks, and represented the height of progress in water transportation. In 1905 the steamship, "Colonel Drake," established precedent by towing an oil-barge across the Atlantic. That was two years after a diesel-driven tanker was tried out, forerunner of the 75,000-bbl. diesel tanker. Today the largest welded ship in the world, an American tanker, is fitted with turbo-electric engines of 5,000 hp., capable of moving a cargo of 56,000 bbls. of oil at a cruising speed of 13 knots an hour.

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph.D., Technical Editor

Inhibiting Hydrate Deposits in Gas Lines With Ammonia

Can you supply us with the details covering the introduction of ammonia into natural gas pipe lines for the purpose of preventing freezing or hydrate obstruction?—O. S. R.

Extensive laboratory experiments on the use of ammonia as a hydrate inhibitor have been made by the Panhandle Eastern Pipe Line Co., which have been confirmed by use in the pipe line for a period extending over three years. The investigation was reported before the American Gas Association by J. T. Russell. The following summary is from this paper.

It was ascertained that the minimum concentration of ammonia effective for preventing the formation of gas hydrates was .0042 per cent by volume, or 42 parts per million (p.p.m.). The natural gas used in these experiments came from the Panhandle field and contained 0.2 per cent carbon dioxide. A pressure of 430 pounds per square inch gauge obtained during the experiments, and a gas temperature of 40° F. was used to induce gas hydrate formation.

The results seem to indicate that ammonia owes its effectiveness as an inhibitor of gas formation to the fact that it combines with water to form a solution of ammonium hydroxide and ammonium carbonates.

Tests lasting 72 days indicated ammonia would cause no damage to copper alloys used in transmission lines, such as brass valve seats, or bronze valves. A field test was made for the removal of a "dead freeze, where the hydrate could not be decomposed by removing the pressure on the down side and allowing 400 pounds to act on the other side. The line pressure was reduced to atmospheric on both sides, and approximately 7 pounds of liquid ammonia was injected on the well side. Full well pressure was then applied to force the ammonia into contact with the obstruction. Removal of the obstruction occurred approximately 40 minutes after the injection of ammonia. Both laboratory and field experiments indicate that 42 p.p.m. ammonia presented hydrate formation and the same quantity effected decomposition. There were no solid ammonium salts formed which might obstruct flow:

A significant observation while using ammonia to decompose gas hydrates was that these apparently liquefy in place, while with alcohol such obstructions many times move down the line without liquefying, sometimes being removed in drips and sometimes lodging in a low sag in the line to start another obstruction.

The type of injector found most satisfactory for continuous operation consists of a Pitot tube to utilize the dynamic head of the flowing gas to cause a certain portion to be by-passed over liquid ammonia contained in a reservoir adjacent to the pipe line. In passing through the reservoir, the gas becomes saturated with ammonia vapor and reenters the line through a tap at right angles to the flow. The desired concentration of ammonia in the gas stream is obtained by controlling the volume of by-passed gas by means of an orifice.

The cost of continuous ammonia injection will vary directly with the unit cost of ammonia. The present price (February, 1937) of ammonia in tankcars is 4½ cents per pound and 15½ cents per pound in 100-pound cylinder. Since 42 cubic feet of ammonia at 60° F.—14.9 lbs./sq. in. abs. weighs 1.933 pounds, one can calculate the cost of protection against gas hydrate formation is 8.7 cents per million cubic feet if the ammonia is purchased in tankcars, and 30 cents per million cubic feet if it is purchased in cylinders.

The injection of ammonia into gas which may be used for domestic purposes is restricted by law, most state laws specifying 5-10 grains of ammonia per 100 cubic feet as the maximum concentration allowable in domestic gas. The concentration necessary for inhibiting the formation of gas hydrates (42 p.p.m.) is, however, only 1.336 grains per 100 cubic feet. It is apparent, therefore, that the legal restrictions in no way restrain the use of ammonia for preventing or decomposing hydrate formations in natural gas transmission lines.

Sour Means Hydrogen Sulfide

What is the meaning of the word sour applied to natural gas and crude oil?—L. P. L.

The first meaning of sour in ordinary use is the taste of acid, such as vinegar and sour milk, but there is a second use which includes disagreeable, unpleasant and distasteful, such as a sour day or sour odor. It is the second meaning that provides the descriptive word for identifying the odor of some natural gases and crude oils. A gas or oil may have a bad odor due to the presence of hydrogen sulfide, mercaptans or certain compounds containing nitrogen. The nitrogen compounds are quite rarely found in either oil or gas, mercaptans very often, and hydrogen sulfide frequently enough to be well known to the chemists and technologists.

Sour is probably more frequently used in connection with oil and gas containing hydrogen sulfide than for any other substance. A very small quantity of hydrogen sulfide is readily detected by the sense of smell, because its odor is very much the same as that of a bad egg. The quantity of hydrogen sulfide has nothing to do with the use of the word sour, except when the quantity contained is so small that it may be removed by very simple methods of chemical treatment, the substance may be graded so sweet.

An oil may contain an exceptionally high percentage of sulfur and yet be sweet as to odor. It may contain a relatively small quantity but be classified as sour because of the objectionable odor of hydrogen sulfide.

Another use of sour and sweet in the industry is in the description of the results of a doctor test. If positive it may be designated sour and if negative sweet. This is a test for mercaptan sulfur.

CHEMICALS FOR THE PETROLEUM INDUSTRY

Aluminum Sulfate

Use — Water treating, decolorizing oils, grease manufacture.

Form—White solid, crystalline, powdered.

Formula—$Al_2(SO_4)_3.18\ H_2O$.

Specific gravity—1.62.

Solubility, cold water, per cent—86.

LIMITATIONS

Ferric oxide, max. .....0.10 per cent

Note. Several grades available. Domestic product usually contains at least 17 per cent Al_2O_3.

Composition of Mid-Continent and Texas Gulf Coast Natural Gasolines

Could you give me any data in regard to the average chemical composition of Mid-Continent and Texas Gulf Coast natural gasolines?—E. F. S.

The percentages of the several hydrocarbons that may make up a natural gasoline will vary with processing conditions and the grade of the product. These factors have more influence on the composition than the source.

The analyses presented in the table are of the 18 pounds vapor pressure grade from the paper by D. E. Buchanan. The 26-pound grade would have a much different composition.

HYDROCARBON ANALYSES OF NATURAL GASOLINE

Volatility—	From Mid-Continent Low	From Mid-Continent High	From Gulf Coast
Vapor pressure at 100° F.	18	18	19
Gravity A.P.I.	77-81	84-88	
Octane number	65-70	75-78	78
Hydrocarbons Volume Per Cent			
Iso-butane	1-2.5	0.0-1	3.56
N-butane	17.5-20.0	14-15	16.01
Iso-pentane	6.5-12	25-30	15.97
N-pentane	15-25	20-25	13.27
Hexane plus	45-60	30-40	51.19

The production of Gulf Coast natural gasoline is small. The product from this district has a relatively low volatility with high octane number. The high octane rating is explained as due to the presence of aromatics, naphthenes and branch chain paraffins.

The next table gives the characteristics of a natural gasoline from East Texas and one made from the refinery gases of a Gulf Coast refinery.

EAST TEXAS AND REFINERY NATURAL GASOLINES

	From East Texas	From refinery gas
Vapor pressure at 100° F.	26	29
Gravity A.P.I.	91	89
Octane number	84	74
Per cent off at 100° F.	55	52
Per cent off at 140° F.	85	80
Per cent off at 212° F.	96	
Endpoint	304° F.	284° F.

Hydrocarbons Volume Per Cent

Iso-butane	1.23	Propane	0.11
N-butane	35.26	Butanes	32.94
Iso-pentane	24.15	Pentanes	40.07
N-pentane	20.37	Hexane plus	26.88
Hexane	10.22		
Heptane plus	8.77		

Reference: D. E. Buchanan, Natural Gasoline in the World Motor Fuel Market, Second World Petroleum Congress, Paris, France, June 14-19, 1937.

PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Data of Temperature Gradients

I would like to get all available information about underground temperatures as encountered in oil wells, and the methods of obtaining them. Do you know of any publication on this subject? Do temperatures hold fairly constant for given depths in different fields of the country or do they vary greatly with different fields? I have heard, of course, that temperatures rise approximately one degree for each 100 feet of depth but this seems a rather rough estimate, and I do not know whether it means degrees, Fahrenheit or Centigrade.—W. P. J.

You have evidently set up for yourself a rather ambitious program for the study of temperature gradients if what you say in the opening sentence is to be taken literally. All the information available on ground temperatures would fill a good size volume and because it is scattered through numerous publications it would cost quite a bit to secure.

However, I think I know what you want and believe the article on "Temperature Gradients" by C. E. Van Orstrand, U. S. Geological Survey, Washington, D. C., published in "Problems of Petroleum Geology," A.A.P.G., 1934, will give you all of the data you desire.

This article can be secured by buying a copy of the volume cited above or you may write to Mr. Van Orstrand in Washington and ask him if he has reprints of that article which he can furnish.

This is an interesting subject and work is still being carried on in the fields gathering data. Reports of progress are made from time to time by the investigators, of whom Mr. Van Orstrand is one of the foremost, so he can give you added information if you desire it.

Where land men are leasing thousands of acres of land each year it is necessary to conserve money and secure the best looking acreage. In this instance it is not a matter of geologic conditions but a simple matter of not spending extra money for a relatively small tract.

There are several map companies in Tulsa and Oklahoma City able to furnish you with ownership maps which will show the lessees of the land in your neighborhood. The geology of Hughes County, Oklahoma, was written by J. Phillip Boyle and published by the Oklahoma Geological Survey some years ago and you might secure a copy of it by writing to Robert Dott, director, Oklahoma Geological Survey, Norman, Okla. There will be a slight charge for either the maps or the report.

In making the above observations about one probable reason why the 40-acre tract might not be desirable it is assumed that title to both pieces is satisfactory. If there is anything the matter with the title it would explain why the tract was not wanted.

History of Steam Drilling Engines

When was the first Ajax steam engine built, and was it single or double cylinder? I would also like the same information about the Ideal engine.—L. M. B.

In an advertisement in the August 27, 1934, issue of The Oil and Gas Journal the National Supply Co. states "Since 1877 the Ajax Iron Works has devoted itself exclusively to the building of steam drilling engines."

This engine is now known as the Ideal-Ajax, a trade name, but we do not know of any Ideal engine.

The first engines built by the Ajax Iron Works were 8 by 12 and 9 by 12 single cylinder engines. They were of the link reversing type with a light frame and usually mounted upon heavy timbers when installed in the rig.

In the August 27, 1934, issue of The Oil and Gas Journal it is also stated that the firm of Messrs. Wood and Mann built a link reversing type steam engine in 7 by 10, 8 by 10, and 8 by 12-inch sizes early in the 1870's but where their shops were located is not stated. Later the cylinders were increased to 10 and 12 inches by 14-inch stroke.

We are checking further into this matter but give you the above information now to acknowledge your letter. If something further is developed we will advise you.

Pre-Cambrian Rocks

Will you give me information as to what is meant by deep wells to "pre-Cambrian," "not to pre-Cambrian," "pre-Cambrian outcrops" which terms are used in connection with oil wells. Is oil found under the pre-Cambrian surface? What is considered as the pre-Cambrian surface?—R. M. H.

Rocks making up the earth's crust have been classified as to periods and eras and the Cambrian rocks are the lowest, or oldest, of the Paleozoic era. The name is derived from the outcrops of this formation in Wales, formerly known as Cambria.

The Cambrian sediments are the earliest or oldest in geologic age, and while some of them contain sandstones of the type likely to contain oil, they do not do so very frequently because they have been metamorphised and changed in character by pressure and heat and by the action of water. This causes them to be more compact and in most instances to be so low in pore space as to be incapable of containing gas or oil.

There are some known Cambrian sands which might be productive of gas and oil under favorable conditions of accumulation, and there are a few oil fields classified as producing from sediments of Cambrian age.

However, it is now generally accepted theory that rocks of the Cambrian and older ages are not oil or gas reservoirs. It is therefore common practice to state that a well has been drilled to the Cambrian or into the pre-Cambrian rocks to indicate that a complete test of the full section of sedimentary rocks has been made.

Oil is not found nor expected to be found in rocks of pre-Cambrian age. Those rocks are igneous in character; that is, they have been deposited in a heated state and probably subjected to heat after deposition so that hydrocarbons could not exist in them because of their nonporous texture and because of the heat to which they have been subjected.

A pre-Cambrian surface is a surface made up of igneous rocks, such as granite, basalt and gneiss. These are mostly crystalline rocks and practically nonporous and not suitable for the accumulation of oil except in fissures or crevices, in which some oil has been found in various parts of the world. The oil has evidently migrated from some adjacent source beds and is not indigenous to the igneous rocks.

From all of this it is evident that a use of terms such as you quote indicates that a test has either penetrated all of the sedimentary formations between surface and basement rocks or it has not. Pre-Cambrian outcrop means that the older rocks than of Cambrian age have been exposed at the surface.

It is now argued by some geologists that oil and gas may be looked for in sediments of Cambrian age, and as stated above, there is evidence to support this theory because gas and oil has been produced from rocks of that age. Some years ago it was a generally accepted fact that no oil would be found below rocks of Mississippian age. Since then wells have been drilled to Ordovician sediments and large oil fields opened. In the same manner it is possible that the industry may later be drilling tests to the Cambrian rocks, which are below the Ordovician in their natural order, and thus open up a new zone for prospecting and producing gas and oil in the future.

Leasing Land in Texas

Our grandfather died several years ago and left us some property near Bayside, Tex., in Refugio County. Neither of us have ever seen the property, but we have heard rumors there might be oil near it. There are a number of questions which we would like to have answered.

Is there likely to be development for oil near Bayside during the next 12 months?

Should we lease the land? If so, for how much? Should we make any special provisions in the contract to lease? Provision for immediate drilling?

Should we sell the land?

How many active wells are there in Refugio County? Average production per well per day, after proration?

Must our deceased grandfather's land be probated in court before companies will lease for drilling?—R. G.

In the first place, to give concrete answers about possibilities of land it is necessary to have quite accurate and detailed description of the parcel. Refugio County is large, and while you mention Bayside it does not appear on one of my oil maps of Texas.

My suggestion would be that you write to the land department of any major oil company doing business on the Gulf Coast, giving them a complete description of your land and offering it to them for lease. The lease form is standard and can be passed upon by your attorney before you sign it. It is a legal document and as such had best be checked by an attorney.

There are several active fields in Refugio County, Texas, and in the forthcoming issue of The Oil and Gas Journal covering the 1937 activities the output of all the fields will be listed. This does not mean production per day per well, but even that information might be secured if necessary.

It will be necessary for you to have clear title to the land before you can expect to deal with any reliable oil company and lease it, so we suggest that you have a talk with your attorney and explain the status of this matter to him and secure his advice. That is the first step in any event and after you know you have good title to the land you can offer it to many oil companies interested in the southwestern Texas district.

FIELD OPERATIONS

Summarizing the Week's Developments

The Ramsey pool discovery well in Payne County, Oklahoma, was estimated good for 10,000 to 14,000 bbls. of oil daily, but had not been given 24-hour potential test. It flowed as high as 780 bbls. of oil in 1 hour and 20 minutes. The Cement field of Caddo County shared in interest with completion of a big gas well and an oil well estimated good for 600 bbls., plus large gas production.

KANSAS

Arbuckle lime production was uncovered in section 33-21-12w, one-half mile southwest of the Sittner-Lansing lime pool in Stafford County, Kansas. The Zenith pool of Stafford County was given north and south extensions at wells in sections 23-24-11w and 26-24-11w.

TEX-LA-ARK

A deep test in the Cotton Valley, Louisiana, field extended Travis Peak production southwesterly. It is the second producer in the Holloway sand, the discovery well having been in section 23-21-10 and the new well in section 33-21-10. Three new deep wells in the Schuler, Arkansas, field averaged about 1,600 bbls. per well.

TEXAS

The K.M.A. deep sand field is the most attractive area in Texas, with new capital being invested for production and leases and a big drilling campaign already under way. The field has been taken out of the stripper class for proration purposes. In West Texas the Slaughter field in Hockley County was extended 2 miles by a 531-bbl. initial producer, the best well in the pool. The Avoca field in Jones County, Central Texas, appears to have a 5-mile extension if the 300-bbl. discovery well is not the first in a new pool. A pool was opened in Nueces County, Southwest Texas, by a 360-bbl. well 10 miles west of Corpus Christi. A deep sand discovery in the Palacios field in Matagorda County resulted in a blowout and a burning well. Distillate production was found in a test on the Woodlawn Prospect in Jefferson Parish, Coastal Louisiana.

ROCKY MOUNTAIN AREA

The Hamilton dome field in Wyoming was given a three-quarter mile extension by a 250-bbl. well.

NEW MEXICO

An eastern Eddy County, New Mexico, wildcat in section 35-18-31, had an increase in oil at 3,884-88 feet and was estimated good for 75 bbls. of oil daily as operators drilled deeper into pay. The new year was off to a fast start with 13 oil wells and one failure completed in Lea County.

CALIFORNIA

Eight drilling wells have cored the productive Ranger zone in the extreme eastern and southeastern parts of the Wilmington field in California. Production tests are to be made this week and big production is expected to result. It is predicted that 200 wells will be drilled in the Long Beach area of the Wilmington field in the first half of this year.

ILLINOIS

Carter Oil Co. opened a Bethel sand pool in Jefferson County, Illinois, the discovery well starting at 70 bbls. of oil at a total depth of 1,990 feet.

Completions in All Fields

(Week Ending January 8, 1938)

	Oil	Gas	Dry	Total	1938 total comp. to date	1937 total comp. to date
N. Y., Pa. and W. Va.	56	20	10	86	184	100
Ohio	6	10	5	21	38	44
Indiana	1	3	2	6	6	3
Kentucky	7	2	6	15	20	13
Illinois	9	0	3	12	25	0
Michigan	11	0	3	14	26	41
Kansas	24	9	15	48	74	69
Oklahoma	15	2	7	24	53	92
Texas:						
North Central Texas	16	0	7	23	57	122
West Texas	37	0	2	39	81	73
Texas Panhandle	17	2	0	19	30	24
East Texas	55	0	5	60	102	99
East Central Texas	11	0	2	13	18	32
East Texas Border	3	0	0	3	9	26
Gulf Coast Texas	24	0	4	28	47	48
Southwest Texas	24	3	2	29	60	114
Total Texas	187	5	22	214	404	538
North Louisiana	16	1	1	18	26	14
Gulf Coast Louisiana	7	0	5	12	22	24
Total Louisiana	23	1	6	30	48	38
Arkansas	6	1	1	8	12	0
Montana	0	0	2	2	4	4
Wyoming	3	2	0	5	11	7
Colorado	0	0	0	0	0	1
New Mexico	15	0	1	16	25	25
Utah	0	0	0	0	0	0
California	16	0	5	21	49	50
Total United States	379	55	88	522	979	1,025
Total previous week	328	43	86	457		
Difference	51	12	2	65		

Outstanding Fields—Highlights

(Week Ending January 8, 1938)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
Hastings	5	8	8	5,240	449	18,696
McCampbell	3	9	0	0	92	4,567
Saxet	9	4	0	0	597	41,727
Benavides	5	8	3	189	125	6,324
East Texas	47	84	55	3,099	24,327	492,150
Talco	2	14	9	2,189	599	27,500
K.M.A.	37	75	4	2,640	93	6,100
Ector County	19	79	11	5,848	809	27,200
Winkler County	9	50	4	4,487	1,540	41,950
OKLAHOMA						
Fitts	1	12	1	41	949	68,850
Billings deep sand	1	4	0	0	59	7,500
KANSAS						
Barton County	8	33	10	5,918	314	9,835
Ellis County	4	21	2	6,112	264	9,343
Rice County	6	25	3	2,308	1,049	25,520
Russell County	9	40	4	1,151	978	1,151
NEW MEXICO						
Lea County	12	108	13	1,806	1,594	98,710
LA-ARK-TEX						
Rodessa, Ark	3	5	4	2,450	57	9,495
Rodessa, La.	0	11	2	490	435	42,495
Rodessa, Tex.	3	8	3	725	386	18,570
Lisbon, La.	3	9	6	7,630	162	11,790
Schuler, Ark.	4	8	3	5,065	26	7,150
MICHIGAN						
Buckeye	7	44	9	2,035	332	26,731
ILLINOIS						
Central Illinois	23	90	9	916	254	25,308
CALIFORNIA						
Wilmington	11	33	4	843	329	62,550

Texas and Louisiana Gulf

PROSPECTIVE NEW FIELD IN NORTHWEST HARRIS COUNTY

By
NEIL WILLIAMS

HOUSTON, Texas, Jan. 10.—Amerada Petroleum Corp. and Stanolind Oil & Gas Co. No. 1 E. M. Mills, 3 miles northeast of the Fairbanks field, northwestern Harris County, was the center of interest along the Gulf Coast district as casing was being run for a production test. Three feet of oil sand was logged in a 15-foot core taken at 6,823-43 feet, and an additional 13- to 20-foot section was reported to have been cored at 6,834-63 feet, the total depth. The bottom three feet was salt water sand and casing is expected to be cemented on bottom and the well tested through perforated casing.

The well is located in the A. Larson Survey on a block of several thousand acres and it is the general opinion that its completion, will open a new field rather than an important extension to the Fairbanks field. While the hole is bottomed in the Cockfield formation, the same as Fairbanks, the sand section appears to be much thicker and the water level was found several feet lower. The Frio was topped at 348 feet, Textularia Warreni, 5,000-20 feet; Massilina Pratti, 5,560 feet, and the Hockleyensis at 5,640 feet.

Pierce Estate No. 1 fee, 2 miles south of McCroskey, I&GN Survey No. 7, Matagorda County, held considerable interest as several feet of sand showing oil and gas was logged in the base of the Marginulina and upper section of the Frio formations. From 6,626-33 feet, 7 feet of core was recovered of which 4 feet was sand, showing oil and gas, one foot of rock and 2 feet of sand showing oil and gas. From 6,632-39 feet, 5 feet of sand and shale having a slight odor of oil was recovered. From 6,652-70 feet, 18 feet was recovered, of which 4 feet was shale with streaks of sand carrying an odor of oil, and 2 feet of sand with a slight odor of oil. Salt water sand was cored at 6,752-39 feet. The Discorbis was topped at 5,490-5,520 feet, Heterostegina at 6,050-80 feet, Marginulina at 6,340-70 feet and the Frio at 6,652-70 feet. It is drilling ahead below 7,126 feet and the hole is scheduled to be drilled to 7,500 feet.

Deep Sand Blowout

A deep sand discovery at the Palacios field, Matagorda County, resulted in a blowout of gas at Sun Oil Co. No. 1 Bayshore Farms, which caught fire, destroying the rig and derrick. The blowout occurred while the operators were coming out of the hole with the drill stem after a test was made through perforated casing at 9,245-75 feet. All but 26 thribbles had been pulled when the well started blowing out. After the blowout preventer was closed the pressure built up to 5,000 pounds which is the highest surface pressure ever recorded on any Gulf Coast operation. While trying to relieve the pressure, the well blew out the remainder of the drill stem and caught fire shortly afterwards. The well is reported to be spraying some oil by heads and also some salt water. Since the hole is protected by three protection strings of casing there is no immediate danger of the well cratering.

Glenn H. McCarthy No. 1 Hebert and Broussard, a possible pool opener for the Cheek area, Jefferson County, perforated casing with 10 holes at 7,729-31 feet and on a drill stem test it tested 120 feet of mud, 1,700 feet of 35 gravity oil, 300 feet of muddy salt water and 100 pounds of working pressure. A cement retainer was set at 7,719 feet and the perforations have been squeezed off, preparatory to reperforating at a higher level. Location is in the C. Hillebrand Survey.

Hardin Defined on South

The southern limits of the Hardin field, Liberty County were defined with the abandonment of Strake Petroleum Co. No. 4 Finley at a total depth of 8,034 feet. It is located 850 feet south of No. 2 Finley, an oil well and east of No. 3 Finley, completed the past week as a small distillate well along with several barrels of salt water. Completions were recorded by Woodley Petroleum Co. on the McMurtry lease and Gulf Oil Corp. on the Hinson lease, both located in the H. B. Johnston Survey in the southwest portion of the field.

In the Kubela area of the Pickett Ridge field, Wharton County, Great Plains Oil Co. No. 1 Bishkin and Meyer, showed as a dry gas well through perforated casing at 4,716-17 feet, and it is expected that the hole will be plugged back to the 4,500-foot horizon, where a drill stem test gave favorable indications.

Humble Oil & Refining Co. No. 1 Pierce, 1½ miles north of production at Friendswood, Harris County, attracted some attention when it attempted to blow out from a gas sand at 3,800 feet. While several wells drilled on the old Genoa structure logged the same sand, no wells in the field proper have found it. Humble Oil & Refining Co. No. 4 Beamer and No. 1 Ross were completed as good producers. No. 4 Beamer flowed 24 bbls. per hour through a quarter-inch choke from a total depth of 6,050 feet, while No. 1 Ross flowed 26 bbls. through the same size choke at the same total depth.

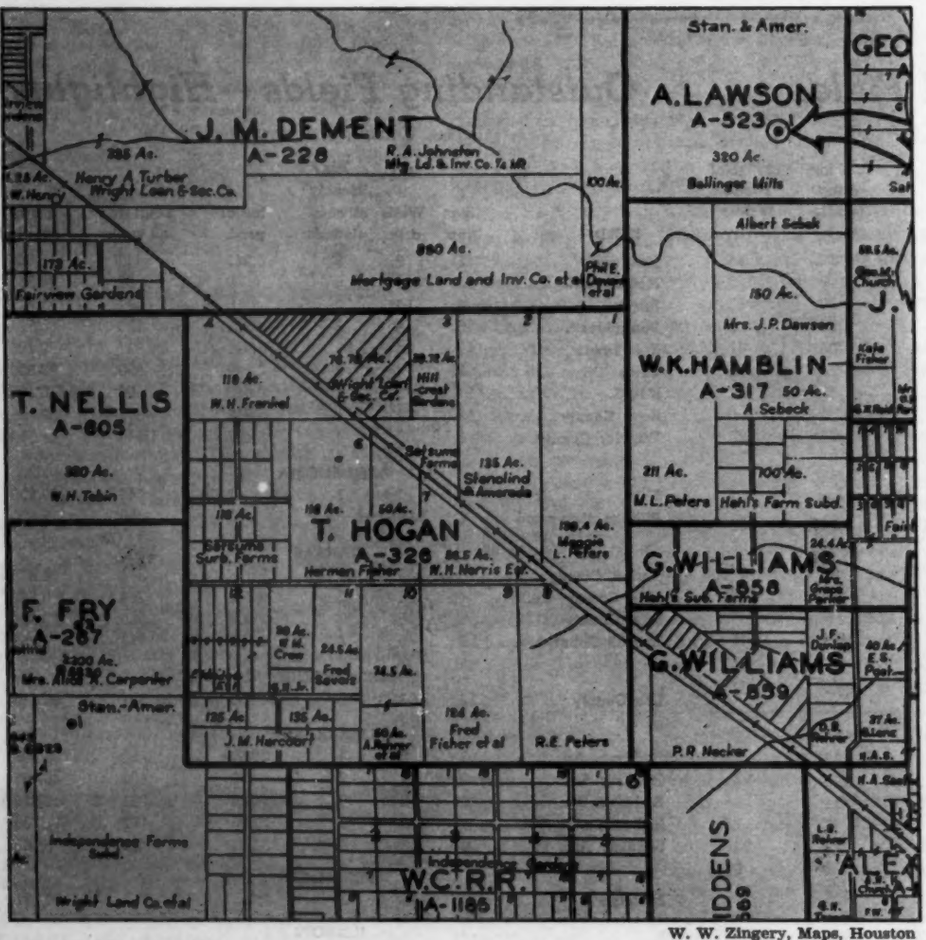
The water level in the Old Ocean field, Brazoria County, the Texas Gulf Coast's deepest producing field was established to some extent with the completion of Harrison and Abercrombie No. 1 Copeland. Drilled to 11,136 feet, with 7-inch casing cemented at 11,026-30 feet, a drill stem test through perforated casing at 11,026-30 feet showed salt water. The hole was plugged back to 10,774 feet and completed through perforated casing at 10,660-77 feet, for an initial production of 307 bbls. per day, flowing through various chokes.

In the Clinton field, Harris County, Stanolind Oil & Gas Co. is attempting a second completion in the 3,700 foot sand at No. 1 Moody, which is bottomed at 3,700 feet. A Schlumberger survey showed broken sand, and shale yielding gas at 3,590-3,600 feet, and sand and shale showing oil at 3,600-22 feet. Five and three-quarter inch casing was cemented at 3,669 feet.

Coastal Louisiana

Coastal Louisiana's first discovery of the year is the Woodlawn Prospect, Jefferson Davis Parish, which was proven for distillate production by the completion of Union Sulphur Co. No. 1 Calcasieu National Bank, section 12-9s-6w. Production was obtained by perforating the casing at 8,276-81 feet, and on a 24-hour gauge,

(Continued on Page 98)



W. W. Zingery, Maps, Houston

Plat of the Fairbanks area, Harris County, showing location of Amerada Petroleum Corp. and Stanolind Oil & Gas Co. No. 1 Mills, a prospective pool opener, 2½ miles northeast of the Fairbanks field, a part of which is shown on the map

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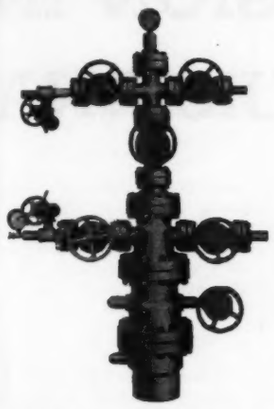

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Among Gulf Coast Drilling Contractors

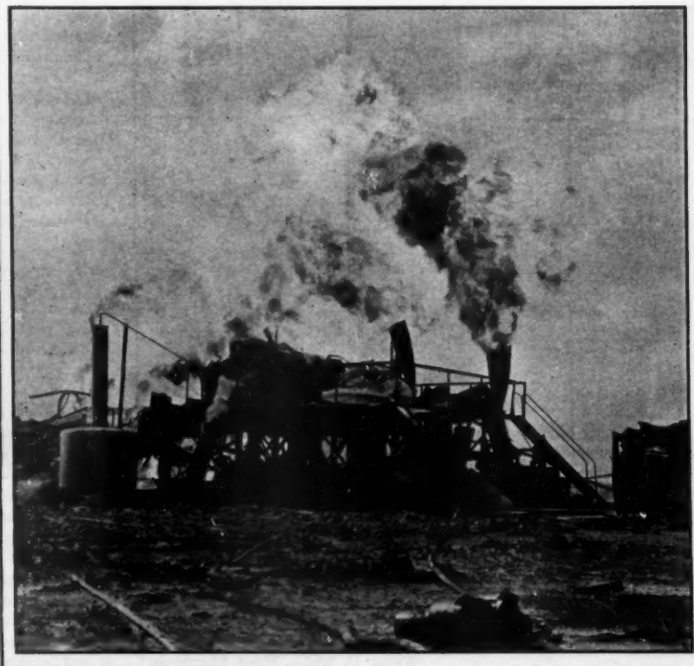
O. W. Dyer is testing Atlantic Refining Co. No. 1 American Rio Grande, 3½ miles south of Weslaco in Hidalgo County. The hole is bottomed at an approximate depth of 9,100 feet, and the production test is being made through perforated casing at 8,095-9,005 feet. This is one of the most interesting deep tests in this area, and the completion attempt has attracted wide attention. Although wildcatting in that particular district of the Southwest Texas area was not very successful the past year an increase in wildcat operations is anticipated this year. Dyer has six other strings of tools running, four of which are located in the active McCampbell field in Aransas County, one in the Hardin field, Liberty County and one at the Dickinson field, Galveston County. All rotaries are running for the Atlantic Refining Co.

The recent completion of L. A. Douglas and others No. 1 Charles McKinzie, the discovery well of the West Saxet or Turkey Creek field, 10 miles west of Corpus Christi and 2½ miles northwest of the Saxet field, Nueces County, has set the stage for an active drilling campaign. Drilled by Trinity Drillers of Corpus Christi, the well flowed 360 bbls. of pipe line oil per day through a three-sixteenths inch choke from perforations in the Frio formation at 5,810-12 feet. Locations for two interesting outpost tests have been made by the Renwar Oil Corp. while several other locations are expected to be made during the week. Close in protection acreage is held by Mills Bennett Production Co., Phillips Petroleum Co. and several others.

Smith & McDannald have apparently opened flank production for the Shell Petroleum Corp. on the southeast flank of the old Jennings field in Acadia Parish as No. 3 Community is being completed through perforated casing at 7,085-95 feet after a drill stem test showed 23 stands of oil. Previous development on this flank has resulted in distillate production. This old field has been Coastal Louisiana's most active area following the opening of flank production on the west side in December 1936.

Drilling operations along the Texas Gulf Coast continue at a low ebb. During the past week there were 24 field locations and two wildcats staked. While drilling operations in the Hastings field have fallen off considerably during the past week, it continues to be the most active area. Wildcats were started in Harris County by W. S. Howell, Jr., on the W. B. Root lease in the A. McCormick Survey while in Polk County, C. E. Gates is moving in material for No. 2 L. O. Jackson located in the J. W. Abbey Survey. At the close of the week there were only 10 active wild-

(Continued on Page 97)



Sun Oil Co.'s burning well No. 1 Bayshore Farms, Inc., Palacios field, Matagorda County, which blew out and caught fire while the drill stem was being pulled after making a drill stem test in a new deep sand at 9,245-75 feet. Before the well got out of control, a surface pressure of 5,000 pounds was recorded

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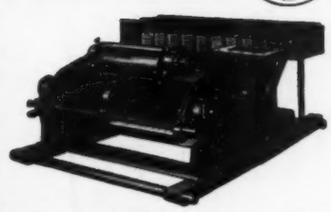

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TRAVIS PEAK EXTENSION IN COTTON VALLEY, LOUISIANA

By
GEORGE WEBER

SHREVEPORT, La., Jan. 10.—A major extension of an oil sand in the Cotton Valley field of Webster Parish highlighted events of the past week in the North Louisiana and Arkansas area, as drilling activity throughout most of the district showed an upturn from the previous several weeks. In Arkansas, the Schuler field led in interest with the completion of large producers. The south edge of the Bull Bayou field in De Soto Parish, Louisiana, is due for considerable activity, with the completion of a producer and staking of a number of additional tests.

Cotton Valley Extension

The importance of the Travis Peak in the Cotton Valley field of Webster Parish was considerably enhanced during the week by the completion of the W. G. Ray Drilling Co. No. 1 Stewart, located in the northeast corner of section 33-21-10. Drilling to a total depth of 5,807 feet, the well was turned into tanks late in the week making 35 bbls. per hour of 50.8-gravity crude and 4 per cent wash water.

Importance of the test lies in the fact that it is the second to be completed in what is known as the Holloway sand. The horizon was opened several months ago by Ohio Oil Co. No. 6 Holloway, in section 23-21-10. The horizon was cored in the discovery test, and carrying it to a total depth of 8,478 feet in the deep Bodcaw sand, major producing horizon in the field, it was plugged back because of mechanical failure to make a well in the deeper sand.

The two wells are producing crude at relatively low gas-oil ratios, in contrast to the high ratios which exist on light crude wells in the Bodcaw sand. Ray No. 1 Stewart cored the sand at 5,791-5,804 feet and set 9⅝-inch casing at 5,780 feet. It was brought in on a 1-inch tubing choke with tubing pressure of 50 pounds and casing pressure of 750 pounds and a gas-oil ratio of less than 1,800 feet of gas per barrel of crude. The Ohio Holloway No. 6 is reported to have been producing about 500 bbls. daily since its completion at a gas-oil ratio of approximately 5,000 feet of gas per barrel. The Ray test is approximately 2½ miles southwest of the Ohio well, and the major extension is expected to lead to further exploration of the 5,800-foot sand, although previous tests found the body too tight for commercial production.

RODESSA—LOUISIANA

The Caddo Parish portion of the tri-state Rodessa field saw two routine completions, as drilling activity in that area struck a low in volume. F. W. Burford No. 1 Cleveland, NW S half section 2-23-16, near the Arkansas state line, was completed in the Gloyd sand for 264 bbls. per day on a quarter-inch choke. Tubing pressure was 1,000 pounds and casing pressure 1,450 pounds and the total depth of the test is 5,985 feet.

Union Production Co. No. 7 Starke, SW section 8-23-16, made an initial production of 225 bbls. on a 24/64-inch choke, with tubing pressure of 250 pounds and casing pressure of 775 pounds. Seven-inch casing was set at 5,918 feet and total depth of the test is 6,000 feet.

RODESSA—TEXAS

The Texas portion of Rodessa is active, due mainly to the drilling in the Jefferson and Lodi areas of Marion County. Since the Turner No. 1 Scuddy, in the Ina Hanks Survey was completed last week, linking the two producing areas, continued increase in development of that important sector is expected. Actual gauge on the Turner well was 567 bbls. per day on a quarter-inch choke with tubing pressure of 575 pounds and casing pressure of 1,225 pounds, a gas-oil ratio of 310 feet to 1 bbl. and total depth is 6,025 feet.

This week in Texas, the Union Production Co. No. 3 Bangus Unit in the Tromwell Survey was completed for an initial of 181 bbls. per day on a 11/64-inch choke with tubing pressure of 250 pounds and casing pressure of 975 pounds. Seven-inch casing was set at 6,031 feet and total depth at 6,044 feet. This well is in Cass County.

In the Jefferson area of Marion County George Barham No. 1 Brantley, in the Bennington Survey, came in making 480 bbls. per day on a quarter-inch choke with tubing pressure of 550 pounds and casing pressure of 900 pounds and a gas-oil ratio of 515 to 1. Seven-inch casing was set at 6,048 feet and total depth of the test was 6,070 feet.

A second test in the Jefferson section of Rodessa was Shell Petroleum Corp. No. 1-B Henderson, Bennington Survey, which was completed for an initial production of 62 bbls. per day on an eighth-inch choke. Tubing pressure of 1,900 pounds and casing pressure of 2,350 pounds were recorded. The Gloyd producer has casing set at 5,978 feet and is bottomed at 6,023 feet.

RODESSA—ARKANSAS

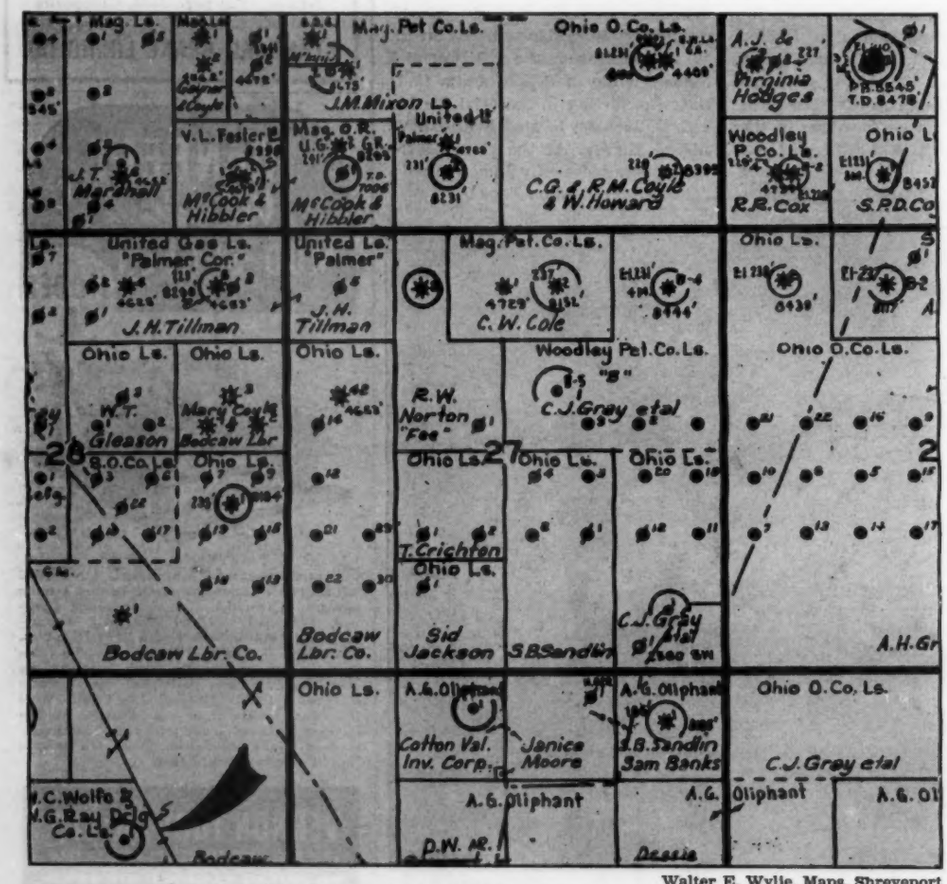
A northwest edge test in the Miller County, Arkansas, part of the Rodessa field came in during the week as American Liberty Oil Co. completed No. 1 Treadway in section 10-20-28 for an initial production of 22 bbls. per hour through open tubing, with casing pressure of 300 pounds. Porous lime was cored at 6,124-49 feet and 5½-inch casing was set at 6,122 feet. Total depth of the test is 6,151 feet.

W. C. Feazel No. 1 Farmer, SE cor. section 13-20-28, gauged 25,000,000 feet of gas and 4 bbls. of distillate per day on open flow before being shut in. Seven-inch casing was perforated at 5,897-5,908 feet and 5,915-25 feet. Total depth of the gasser is 6,098 feet. Rock pressure reached 2,200 pounds.

R. H. Long No. 2 Greer, NW NE SE section 10-20-28 came in making 480 bbls. per day on a half-inch choke at a tubing pressure of 50 pounds and casing pressure of 500 pounds. Porous lime was cored at 6,127-47 feet and bottom of the hole is 6,147 feet with 7-inch casing set at 6,110 feet.

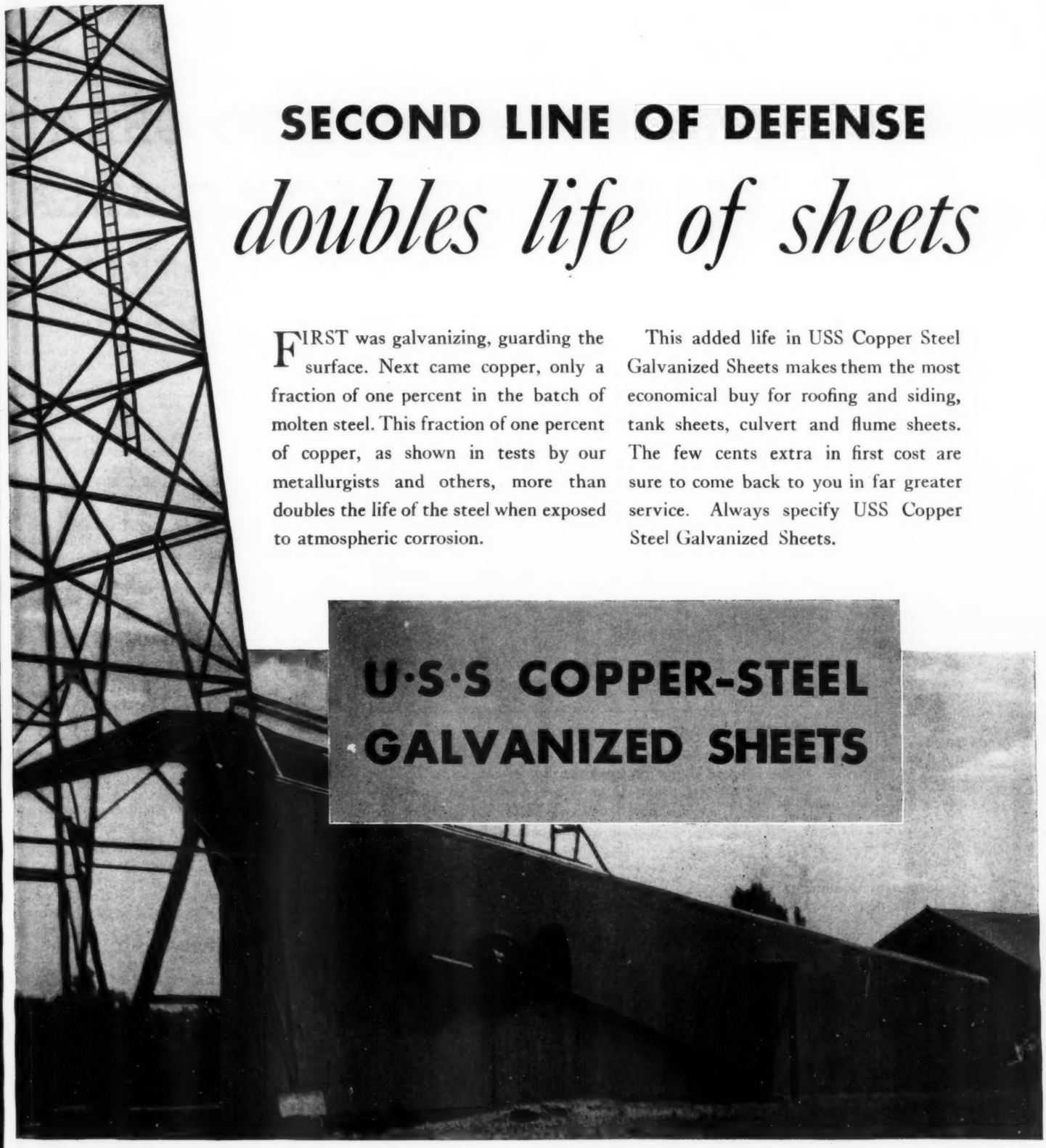
Mrs. S. O. Thompson No. 1 Greer, SW SW NW section 11-20-28, was completed for 1,440 bbls. per day on a 1-inch choke with casing pressure recorded at

(Continued on Page 87)



Walter E. Wylie, Maps, Shreveport

The Holloway sand of the Cotton Valley field in Webster Parish gained its second producer during the past week when the Ray Drilling Co. No. 1 Stewart (indicated by arrow) came in making 35 bbls. per hour of 50.8-gravity crude. The strike extends production in the sand approximately 2½ miles southwest. Discovery well of new sand is indicated by the double circle in section 23



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California Field Report

ALL SIGNS POINT TO GREAT YEAR IN THE PACIFIC AREA

By L. P. STOCKMAN

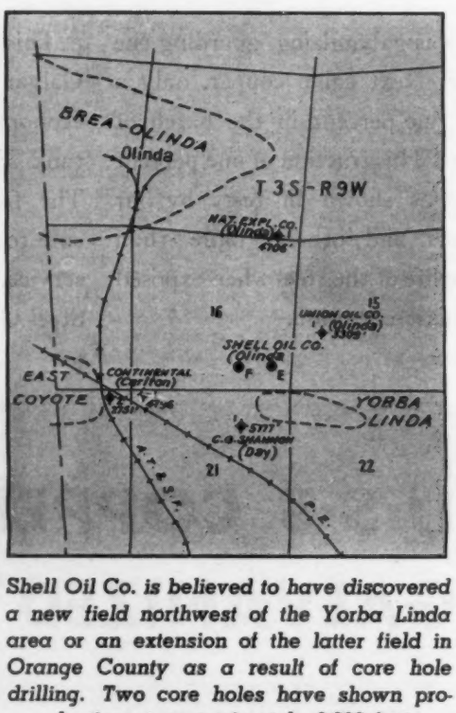
LOS ANGELES, Calif., Jan. 10.—Any doubt that might have existed regarding drilling operations in California during 1938 has been dissipated by a series of favorable developments during the past fortnight and it now appears definitely assured that the high rate of development that characterized drilling operations in 1937 will continue uninterrupted for at least six months. The first and most important of this series of favorable developments was the coring of the productive Ranger zone in the extreme eastern and southeastern end of the Wilmington field in the Long Beach Harbor area by eight drilling wells. Production tests are expected to be made on two of these potential producers this week and large flowing production is anticipated. Approximately 200 new wells are expected to be drilled during the first six months of 1938 in the new area opened by this extension work and since Union Pacific Railroad Co. has a number of inside locations available for work in the original section of the field situated within the corporate limits of Los Angeles it is not improbable that 300 wells will be drilled in the Wilmington field this year, approximately 20 per cent of the total number of completions recorded in California in 1937.

Present production of crude oil in the Wilmington field is about 62,000 bbls. per day from 326 wells, and a recent check indicated that the field's potential production was 85,000 bbls. per day. With the exception of General Petroleum Corp., Union Pacific Railroad Co. and a few other operators, there is very little actual curtailment. The delay in lifting drilling restrictions in the Long Beach Harbor section of the Wilmington field retarded development work late in 1937 with the result that the field's potential has shown a fast decline since November. The completion of approximately 200 new wells in the next six months will have a tendency to increase production. It is not believed that the new production will cause any serious complications in the existing proration program as a large part of the additional acreage recently proved productive is held in large blocks by conservative operators.

Drilling to Continue

The probability that field operations in California will continue at a high rate for at least the first six months of 1938 has been further strengthened by the successful completion of a large well in rocks of Miocene age in the western end of the Montebello field and by projected deep drilling in the Torrance field of Los Angeles Basin where operators have been conducting a series of deep zone tests during the past several months. Chanslor Canfield Midway Oil Co., discoverer of the Torrance field, has redrilled and deepened several former upper zone producers and while the new zone is not highly prolific and may be rather limited in areal extent it will never the less justify the drilling of new wells or deepening a number of upper zone producers that have ceased to be commercially productive. The zone scheduled to undergo development in the Torrance field during 1938 is located at approximately 5,000 feet and the initial daily production of the first few completions has ranged from 100 bbls. to 300 bbls. This preliminary deep zone exploitation has resulted in the decision of several operators to immediately engage in deep drilling and has encouraged operators from other fields to enter Torrance field and negotiate drilling and development contracts. It is a little too early to estimate just how extensive this deep drilling program will become in the Torrance field as conclusive data regarding subsurface conditions are not yet available.

St. Helens Petroleum Co. has definitely proved the Miocene productive in the extreme western end of the Montebello field. St. Helens will start another Miocene test in a few days. Standard Oil Co. has tentatively decided to begin work on a well on the Benedictine lease and another on the Whitehead lease both of which are west of St. Helens Petroleum Co.'s new deep zone producer and farther out on the plunge of the structure. Union Oil Co. has taken several small properties as a protective measure, but may begin work on a deep test in the not far distant future. No. 19 Monterey of St. Helens Petroleum Co., the deep zone discovery well, was given a preliminary production test a few weeks ago with the hole open 5 feet below the shoe, but it came in wet due to a defective water shutoff. The well was killed and 14 sacks of cement squeezed out around the shoe of the 8⅝-inch water string landed at 6,221 feet. The hole was then cleaned out to a point 5 feet below the shoe and was swabbed in, flowing 600 bbls. of clean 34.8 gravity oil and 5,000,000 feet of natural gas per day. The crew then went into the hole and cleaned out to bottom, 6,353 feet, and returned the well to production flowing 2,500 bbls. of clean 34.9 gravity oil and 9,000,000 feet of natural gas daily. The company has a small absorption plant nearby but found it advisable to pinch production back to 1,000 bbls. per day due to the inadequate capacity of the plant. Necessary equipment to enlarge the plant is expected to be ordered within a few days. The company will also construct several additional storage tanks on the Monterey lease to facilitate the transportation of crude oil and natural gasoline from Montebello to Pico, where the company's refinery is located. In the meantime the gasoline is being mixed with the crude oil as a matter of convenience and to facilitate transportation.



Shell Oil Co. is believed to have discovered a new field northwest of the Yorba Linda area or an extension of the latter field in Orange County as a result of core hole drilling. Two core holes have shown production at approximately 2,800 feet

Ventura Avenue

Three excellent wells were completed in the Ventura Avenue field and two more, General Petroleum Corp. No. 13 Notten and No. 18 Hartman of Tide Water Associated Oil Co., should be tanking oil within two weeks. No. 92 Taylor of Shell Oil Co. was brought in flowing 3,844 bbls. of clean 30.2 gravity oil and 2,300,000 feet of natural gas per day from 8,257 feet, and Tide Water Associated Oil Co. No. 32 Ventura Land & Water flowed 1,585 bbls. of clean 26.3 gravity oil and 1,950,000 feet of natural gas daily from 7,210 feet after the hole had been carried down to 7,430 feet and plugged back to completion depth because of bottom water. It was finished with 579 feet of 6⅝-inch liner including 520 feet of perforated landed at 7,200 feet. It extends the field 500 feet. Shell Oil Co. recompleted No. 45 Taylor, flowing 510 bbls. of 29.6 gravity oil cutting 15 per cent and 830,000 feet of natural gas per day after the hole had

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	December 31		December 23			
	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Intercoastal-domestic:						
Crude oil	.....	.....	.....	.....	129,788	.....
Diesel and gas oil	.....	.....	.....	.....	176,726	406,090
Gasoline	52,521	7,503	129,760	18,537	4,092,608	5,525,864
Kerosene	72,634	10,376	.....	.....	401,541	1,130,406
Foreign exports:						
Crude oil	899,728	128,533	618,351	88,336	16,939,187	9,830,187
Fuel oil	417,362	59,623	168,442	24,063	14,086,300	11,353,818
Diesel and gas oil	209,959	29,994	60,665	8,666	8,043,784	5,714,634
Gasoline	29,743	4,249	54,184	7,741	8,009,435	8,163,751
Kerosene	.....	.....	.....	.....	2,003,872	1,585,669
Lubricants	.....	.....	.....	.....	12,984	.....
Other unfinished oil	.....	.....	.....	.....	1,028,732	325,388
Coastwise-domestic:						
Crude oil	400,136	57,162	114,190	16,313	6,299,931	7,680,372
Fuel oil	93,253	13,322	168,950	24,136	15,448,066	11,147,114
Diesel and gas oil	38,807	5,544	50,041	7,149	2,353,259	1,173,006
Gasoline	303,292	43,327	318,026	45,432	16,377,592	13,103,558
Kerosene	42,168	6,024	.....	.....	466,423	173,768

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic:						
Diesel and gas oil	76,265	10,895	65,459	9,351	549,993	218,603
Gasoline	.....	.....	.....	.....	151,052	285,959
Kerosene	.....	.....	.....	.....	72,750	.....
Asphalt	.....	.....	.....	.....	413,885	327,418
Lubricants	.....	.....	.....	.....	28,548	47,560
Foreign exports:						
Crude oil	158,496	22,642	149,434	21,348	3,620,732	3,510,200
Fuel oil	49,345	7,049	23,529	3,361	1,967,509	2,390,295
Diesel and gas oil	86,760	12,394	74,518	10,645	3,015,862	2,131,563
Gasoline	145,180	20,740	113,686	16,241	5,470,426	3,798,685
Kerosene	11,385	1,626	.....	.....	928,202	701,660
Lubricants	63,136	9,019	51,980	7,426	706,970	420,638
Asphalt	.....	.....	.....	.....	.....	9,147
Other unfinished oil	.....	.....	24,950	3,564	24,950	90,923
Coastwise-domestic:						
Fuel oil	65,979	9,417	148,189	21,170	6,445,335	6,342,786
Diesel and gas oil	25,170	3,596	69,147	9,892	1,552,888	646,056
Gasoline	264,169	37,738	73,480	10,497	6,181,466	5,457,733
Kerosene	34,126	4,875	25,462	3,637	491,368	203,744

been deepened to 6,282 feet and finished with an 8⅝-inch water string and a 6⅝-inch liner. No. 13 Notten of General Petroleum Corp. and No. 18 Hartman of Tide Water Associated Oil Co. drilling ahead at 9,776 feet and 9,595 feet, respectively, will be completed in the deep 57 zone discovered by Tide Water Associated Oil Co. several years ago.

Santa Maria Valley

Three new wells were completed in the Santa Maria Valley field. No. 1 Security of Union Oil Co., an offset to E. H. Moore No. 2 Union Sugar, a recent completion in the Santa Maria Valley field, on the Black Road just north of its intersection with the Betteravia lateral, has been completed pumping 132 bbls. of 15.9 gravity oil per day. It was bottomed in Franciscan basement at 4,933 feet and finished with 261 feet of 6⅝-inch liner, including perforations at 4,694-4,794 feet and at 4,838-4,931 feet. Union's southernmost well in the Santa Maria Valley field, No. 2 Bradley Lands, located near the southern boundary of section 25-10-34, is nearing completion. The company has erected derricks for two additional wells in the Adam area in section 24-10-34. These wells are No. 2 Bettiga located along the east section line offsetting No. 4 Battles and No. 3 Moretti on the west section line, offsetting A. N. Macrate No. 2 Rice, a producing well. In addition Union Oil Co. is building rigs for two new wells to be drilled in the west side extension of the field. These new wells are No. 2-1 O'Donnell south of No. 1 Security and offsetting E. H. Moore No. 4 Union Sugar on the Black Road and No. 2 Vincente in the southeast corner of Union's Frank Vincente lease in the C section 21-10-34.

A. D. Mitchell has completed his No. 2 Wilson in section 27-10-34 flowing 2,245 bbls. of clean 15.7 gravity oil per day from 4,610 feet after finishing the hole with 367 feet of 5¾-inch liner including 327 feet of perforated but the well was shut in immediately subsequent to completion due to lack of adequate storage facilities. This well was brought in flowing through an 18/64-inch bean and will probably be on steady production within 10 days, as two tanks are being erected. No. 1 Rice of Petroleum Properties in section 19-10-33 has been completed pumping 150 bbls. of 14.8 gravity oil cutting 10 per cent daily from 2,200 feet after the hole had been plugged back from 2,321 feet because of bottom water. Ground has been broken for a tank farm to be constructed by the Petrol Corp. near Casmalia and while the company has indicated its intention of laying a new submarine pipe line to permit the loading of tankers no action has yet been taken on this matter. The building of such a line would permit Petrol Corp. transport its production from the Gato Ridge field to its Los Angeles refinery as well as to move any oil purchased in the Santa Maria Valley field. Pacific Western Oil Co. has completed No. 6 Hobbs. It has been flowing into sump and will be shut in until sufficient storage has been erected. It appears to be good for about 500 bbls. per day from 4,988 feet.

Wilmington Completions

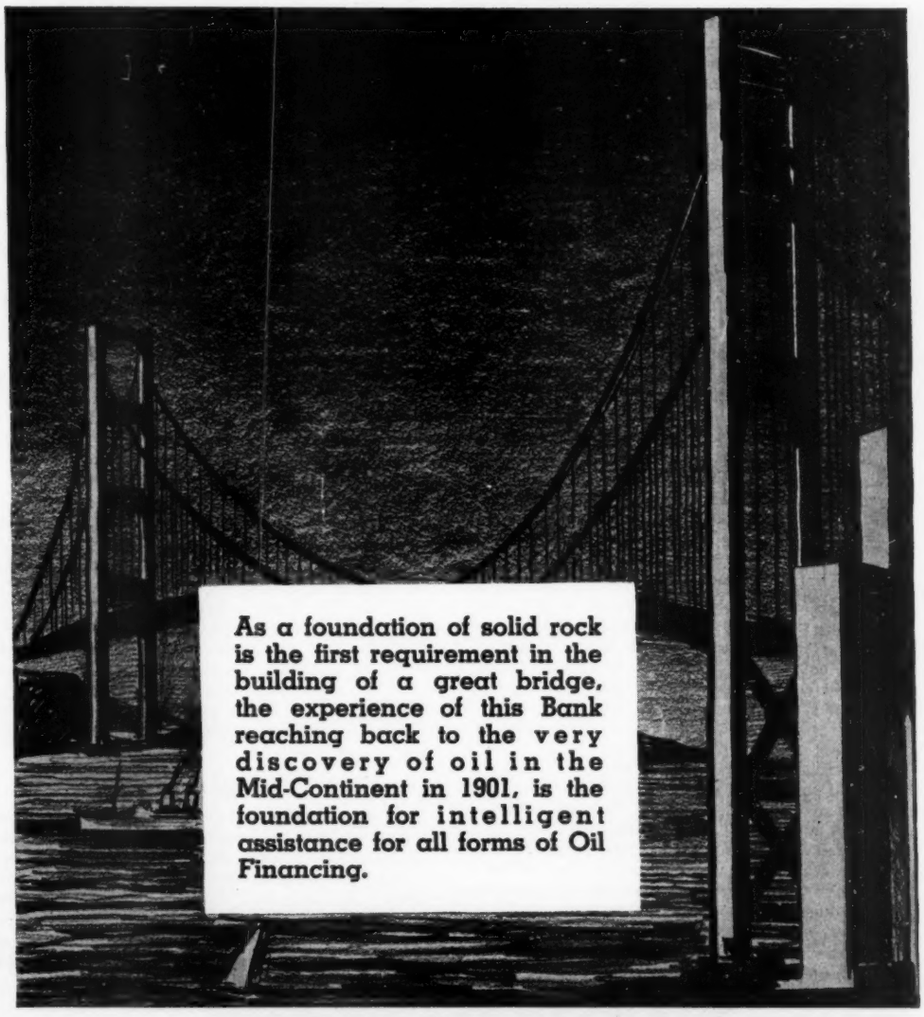
Four new wells were completed in the Wilmington field of Los Angeles Basin. The Long Beach Harbor Commission and Union Pacific Railroad Co. have reached an amicable agreement regarding future development in the Long Beach section of the Wilmington field which should prove mutually beneficial. Union Pacific Railroad Co. has agreed to permit the Harbor Department or its representatives to drill four wells on its acreage in order to permit the department to whipstock the holes beneath the ship channel and thus exploit submerged land. Union Pacific Railroad Co. has also agreed to permit any adjustment necessary if pending litigation should determine that the city of Long Beach has an equity in acreage now being developed. Much of the involved acreage in the southern end of the Long Beach Harbor district was filled in several years ago as a result of dredging operations and hence there is a possibility of title.

Union Pacific Railroad Co. again headed the completion list in the Wilmington field by finishing two new wells. The company's No. 61 was completed flowing 181 bbls. of very clean 17.5 gravity oil per day from 3,475 feet and well No. 77 was brought in flowing 274 bbls. of clean 19.1 gravity oil daily from 3,195 feet. The former is flowing Terminal zone production into tanks with Ranger zone production going to sump until it has cleaned up. Well No. 77 was finished with 278 feet of 6⅝-inch liner including 525 feet of perforated. Royalty Service Corp. which has pursued an aggressive development program in the Wilmington field has completed No. 1 Fleming, flowing 218 bbls. of 15.7 gravity oil cutting 5 per cent daily from 3,634 feet after the hole had been finished with 675 feet of 5¾-inch liner including 654 feet of perforated. This new producer, which was completed with 2,950 feet of 2½-inch tubing, is flowing through 36/64-inch bean under a tubing pressure of 125 pounds and a casing pressure of 740 pounds. No. 1 Joint Community of Bankline Oil Co. has been completed flowing 170 bbls. of clean 19.3 gravity oil per day from 3,387 feet. It was finished with 324 feet of 6⅝-inch liner, including 318 feet of perforated landed at 3,385 feet and is flowing through a 23/64-inch bean under a tubing pressure of 160 pounds and a casing pressure of 130 pounds. Lomita Gasoline Co. instead of moving its natural gasoline plant from the Long Beach field to Wilmington has decided to lay 16 miles of 16-inch line to move natural gas from Wilmington to Long Beach for processing. The company has made contracts with Superior Oil Co., A. T. Jergins Trust, Hancock Oil Co., and Allied Oil Co. which concerns are drilling or will soon begin drilling new wells in the eastern end of the Wilmington field.

Round Mountain

Operators in the Round Mountain field of Kern County have just closed a busy week during which time three new wells were completed and three additional spudded in. H. A. McDonald completed No. 2 Bell in section 12-28-28, pumping 445 bbls. of clean 14.6 gravity oil per day from 1,995 feet. D. G. Vedder No. 3 Bell, in section 12-28-28, adjacent to McDonald's new producer, was completed pumping 378 bbls. of clean 14.3 gravity oil per day from 1,950 feet. Cal-Western Oil Co. No. 4 Kernco, located on property recently leased from St. Helens Petroleum Co., has been finished pumping 320 bbls. of clean 14.5 gravity oil daily. This new well was finished with 41 feet of 6⅝-inch liner including 30 feet of 80-mesh screen and 1,820 feet of 3-inch tubing. Marcan Oil

(Continued on Page 87)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Southwest Texas District

TWELFTH POOL FOR NUECES; CONNECT 2 POOLS IN WEBB

By F. L. SINGLETON

CORPUS CHRISTI, Tex., Jan. 10.—Preparations were being made for an immediate drilling campaign in Nueces County's twelfth oil pool, referred to as the West Saxet or Turkey Creek field. The new strike is located 10 miles west of Corpus Christi and 2½ miles northwest of the Saxet field and was opened by L. A. Douglas No. 1 Charles McKenzie, B.S.&F. Survey No. 419. On a 24-hour gauge ending 7 a.m. January 6, the well flowed 360 bbls. of 35-gravity oil, plus 3 to 4 bbls. of wash water and drilling mud, through a three-sixteenths inch choke, with tubing pressure 1,000 pounds and casing pressure 1,025 pounds. Production is from the Frio formation, through casing perforated at 5,810-12 feet.

This is believed to be one of the most important fields opened in the Corpus Christi area. As indicated by the geophysical picture, the structure overlies a large area and the producing trend is expected to be extended into San Patricio, adjoining county to the north. The potentiality of the new field will be determined at an early date as locations for two outpost tests have been made. One mile southwest, Renwar Oil Corp. has derrick up for No. 1 Rand Morgan, Lot 85 of the B.S.&F. Survey No. 413, while approximately 1,500 feet due east the same company is moving in material for No. 1 Charles McKenzie.

A short gathering line, connecting the discovery well to a 20,000-bbl. storage tank is being constructed by the Southern Mineral Corp. which is expected to lay a pipe line outlet to the company's terminal at Corpus Christi in the near future.

Agua Dulce Field

In the Agua Dulce field, Nueces County, Union Producing Co. is preparing to complete No. 1 Galladay as a gas well. It is in the R. Garcia Grant. The hole is bottomed at 6,764 feet, and casing is being cemented on bottom preparatory to perforating, and the well is expected to extend the field a short distance to the north. One mile west of Banquete, same company's No. 1 A. B. Simmonds, a wildcat, in the Lopez De Juan Survey, topped broken sand at 7,883 feet and cored hard porous sand with a slight show of distillate from 7,886-7,902 feet. The hole is bottomed at 7,935 feet and the rig is shutdown for repairs. Northeast of the Luby field, Richardson Petroleum Corp. No. 1 Chapman is reported to have tested salt water on a drill stem test in the 5,400-foot horizon and it is drilling ahead.

W. V. Bowles No. 1 Robertson, the discovery well of the East Telfener field, Victoria County, flowed only 39 bbls. of pipe line oil in 16 hours through a three-sixteenths inch choke and it is possible that the screen will be pulled and reset in an attempt to increase its production. It was completed the latter part of December, with an initial production of 20 bbls. per hour through a quarter-inch choke from sand bottomed at 5,114 feet. Location has been made by the same operator for No. 2 Robertson, 660 feet southwest of the discovery, while Sun Oil Co. is reported to have staked a diagonal offset. A survey is being made for a 2-inch oil line to Telferner where a 10-car loading rack will be built.

Union Producing Co.'s attempt to open a deeper producing horizon in the old Refugio field, Refugio County, with its No. 9 Phil Power, failed and the hole is being plugged back to the 6,600-foot horizon. The crew perforated casing at 7,700-03 feet and the well flowed an estimated 5 bbls. of 38.5-gravity oil per hour, with an estimated 15 per cent salt water. The salt water content is said to have increased, resulting in the hole being plugged back. In the Woodsboro area, Continental Oil Co. has derrick up for No. 1 Scott Heirs, a wildcat in the Dona A. Reojas Survey.

In Goliad County, Rual Swiger No. 1-B Wood, J. Shearn Survey, a prospective pool opener, which has been shutdown during the holidays, was swabbed several times the past week and it reported that from 35 to 50 bbls. of oil was recovered with no salt water. The test was made through perforated casing at 5,009-15 feet. Operations have been shutdown and the well is standing with a shut-in casing pressure of 60 pounds. It is about 12 miles south of Goliad.

Duval and Starr Wildcats

Scheduled production tests on two wildcats in Duval and Starr counties were holding attention of operators in the Laredo district, although heavy rains continue to retard operations. In northwestern Duval County, Survey No. 344, Karney Gravis No. 1 Friedrick cored soft sand with a good odor of oil at 1,053-56½ feet, and casing was cemented for a production test.

Five miles southwest of the Benavides field, Santos Flores Grant No. 25, Circle Oil Co. and others No. 1 Southland Life Insurance Co. is drilling below 3,300 feet and is being watched with interest. It is located on the same general trend as the Benavides field, and has the Cockfield formation as its objective. Another 6,000-foot wildcat is getting under way. It is Frank Gravis No. 1 Megerle located in the Joseph Bayles Survey, section 245. Since the discovery of the Benavides field, numerous deep tests are expected to be drilled along this trend during the year.

W. W. Ely No. 1 M. G. Gonzales, a wildcat located in the town of Rosita, Portion 70, Starr County, has cemented casing for a production test. Broken sand showing oil was cored at 770-95 feet and another sand was logged at 1,310-50 feet. The hole was drilled to 3,005 feet, and casing cemented on bottom. The Cockfield was topped at 814 feet and the Cook Mountain at 2,392 feet. In the northeastern part of the county, Wheelock and J. S. Collins No. 1 Guerra, San Jose Grant, has been abandoned at a total depth of 7,009 feet. A production test in a 6,100-foot sand showed considerable gas pressure along with several hundred feet of salt water.

Webb County

A new drilling campaign is expected for the Killam and Oilton field, Webb County, as a result of the completion of Lewis Jones No. 1 Sanez, which practically joined the two fields when it flowed 250 bbls. per day through a quarter-inch choke from the Mirando sand at 1,922-27 feet. These two fields have been the most active in the Laredo district during the past year and until the above completion the two pools were believed to have been completedly developed.

A shallow gas field was opened in Webb County with the completion of Nessly and others No. 3 A. M. Bruni, which was completed as a dry gas well through perforated casing at 1,804-08 feet. Location is in Survey No. 449.

In the Rio Grande Valley, testing of Atlantic Refining Co. No. 1 American Rio Grande continued to be the center of interest. A drill stem test through perforated casing at 9,008-15 feet showed 300 pounds of working pressure. The perforations were squeezed off and the well was being tested through perforated casing at 8,095-9,005 feet. Location is 3 miles southwest of Weslaco in section 175. Y. & B. Oil Co. No. 1 Waite, another projected deep test located in the Los D. Jidos Grant was abandoned at 6,424 feet, due to mechanical trouble.

Along the Balcones Fault line and located in the recently opened Lost Mule field, Caldwell County, McNeil Petroleum Co. No. 2 Moreno, 300 feet due south of the discovery well has been abandoned in the Edwards lime at 1,877 feet. The lime formation was topped at 1,831 feet. Future development of this field was discouraged with the abandonment of the same company's No. 1 Moreno, the discovery well which was quit after it began to make 100 per cent sulfur water.

Two important wildcats are getting started in Caldwell and Guadalupe counties. Northeast of Staples in the S. B. Morrison Survey, Caldwell County, O. W. Whitley spudded No. 1 Jennings. In Guadalupe County, C. H. Robertson and others have spudded No. 1 Neighbors, located in the H. M. Swift Survey.

COMPLETED WELLS IN SOUTHWEST TEXAS DISTRICT

Completed wells in the proven Southwest Texas fields, with their total depth, and the initial 24-hour production of the producing wells, were as follows:

Bee County

Normanna field: J. R. Dougherty No. 4 Hicks, 4,628 feet, abandoned.

Caldwell County

Luling field: Koenig Oil Co. No. 13 Tiller, 2,095 feet, 14 bbls., pumping. Millican & Norman No. 5 Tolbert, 2,095 feet, 225 bbls. per day, flowing by heads.

Duval County

Benavides field: Gravis & Doran No. 10 Puig, 4,804 feet, 102 bbls., one-eighth inch choke. Frank Gravis No. 1-A Vaello Puig, 6,018 feet, plugged back to 4,050 feet, perforated casing 3,965-73 feet, gas well. Hiawatha Oil & Gas Co. No. 5 Parr, 4,717 feet, 87 bbls., 12 hours, 5/32-inch choke. Cole field: Sovereign Oil Co. No. 1 Benavides, 3,609 feet, abandoned. Hoffman field: Gulf Stream Oil Co. No. 7-B Hoffman, 2,794 feet, 23 bbls., jetting with gas. Seven Sisters field: Reynolsa Oil Co. No. 1 Garza, 1,491 feet, 65 bbls., pumping.

Frio County

Pearsall field: Amerada Petroleum Corp. No. 8 Halff and Oppenheimer, perforated casing 5,525-5,708 feet, 110 bbls. 23 hours, pumping. Amerada Petroleum Corp. No. 1 Nelms, 3,930 feet, gas well.

Hidalgo County

LaBlanca field: Gulf States Oil Co. No. 2-A Delta Orchards, perforated casing 7,880-88 feet, 90 bbls. distillate through two three-eighths inch chokes.

Jim Wells County

Armagosa field: Smith & Storey No. 2 J. C. McGill, 2,196 feet, gas well.

Live Oak County

Ezzell field: Sure Oil Co. No. 2 Ford, 1,524 feet, 183 bbls., pumping.

Nueces County

Flour Bluff field: Humble Oil & Refining Co. No. 1 Bonham and Hass, 6,655 feet, 146 bbls., one-eighth inch choke. Humble Oil & Refining Co. No. 10 Webb, perforated casing 6,637-42 feet, 165 bbls., one-eighth inch choke. Luby field: Seaboard Oil Corp. No. 3 Luby, perforated casing 5,055-69 feet, 162 bbls., one-eighth inch choke. Stanolind Oil & Gas Co. No. 1 Spessard, 4,350 feet, 130 bbls., one-eighth inch choke.

San Patricio County

Plymouth field: Plymouth Oil Co. No. 90-C Welder, 5,475 feet, 11 bbls., 9/64-inch choke.

Refugio County

Tomoconnor field: Hewitt & Dougherty No. 65

(Continued on Page 75)

Kansas Developments

By
DAL DALRYMPLE

STAFFORD STRIKES EXTEND ZENITH, OPEN NEW SECTOR

An Arbuckle lime discovery in northern Stafford County was a feature of field activity in Kansas the past week. Stanolind Oil & Gas Co. No. 1 Walker, NE NE SW section 33-21-12w, about one-half mile southwest of the Sittner pool, produced 26 bbls. of oil an hour in a two-hour test, swabbing from bottom of the hole at 3,625 feet. Arbuckle lime was topped at 3,622 feet. Operators were running tubing preparatory to completion. Production in the Sittner pool is from Lansing lime.

The Zenith pool of Stafford County also attracted attention, with north and south extensions near completion. Stanolind Oil & Gas Co. and others No. 1 Volker, SW NW NE section 23-24-11w, one-fourth mile north of production, had initial production of 1,710 bbls. of oil daily from Misener sand at 3,802 feet, total depth. The same operators' No. 1 McComb, NW NE NW section 26-24-11w, one-half mile south of Zenith production, cored Misener sand saturation to 3,812 feet, and was due for completion this week.

Work was started and the crew was drilling ahead at Cities Service Oil Co, and others No. 1 Schroeder, C N half N half NW section 29-17-9w, wildcat in Ellsworth County.

Wildcat Completions

Watchorn Oil & Gas Co. No. 1 Brown, NE NE SE section 34-13-17w, wildcat, opened a new producing area in Ellis County. It found Arbuckle lime at 3,511 feet, total depth 3,529 feet. After acid treatment it made potential of 515 bbls. of oil, with a large amount of water, later pumping 50 bbls. of oil and 150 bbls. of water in 24 hours. Top of anhydrite was 1,160 feet, Topeka lime 2,980 feet, Kansas City lime 3,265 feet.

Skelly Oil Co. and associates No. 1 Adams, SE NW NE section 2-28-11w, Pratt County wildcat, produced 43,485,000 feet of gas, with rock pressure of 1,325 pounds, after acidizing. Viola lime pay was found at 4,177-4,200 feet, total depth 4,300 feet, plugged back to 4,200 feet. Top of anhydrite was 1,450 feet, Topeka lime 2,983 feet, Kansas City lime 3,537 feet, Viola lime 4,172 feet, Simpson zone 4,272 feet.

Helmerich & Payne and others No. 1 Hoeme, SE SE NE section 20-26-12w, wildcat in Pratt County, had Arbuckle lime at 4,427-70 feet, total depth, and was dry and abandoned.

Hinkle and others No. 1-A Andrea, NE NE SE section 7-17-10w, wildcat in Ellsworth County, had a hole full of water at 3,411-16 feet, total depth, and was abandoned. Top of Arbuckle lime was 3,397 feet.

Wakefield & Brouk No. 1 Kerbs, NW NW SE section 11-17-16w, Rush County wildcat, topped Arbuckle lime at 3,620 feet, had a hole full of water at 3,626-29 feet, total depth, and was abandoned.

Street & Butler No. 1 Kincaid, NE NE NW section 13-24-2w, was an abandoned wildcat location in Reno County.

Fred Rust and associates No. 1 Sims, NW NW SW section 8-23-11w, Stafford County wildcat, found Arbuckle lime at 3,702 feet, but was dry and abandoned at 3,729 feet, total depth.

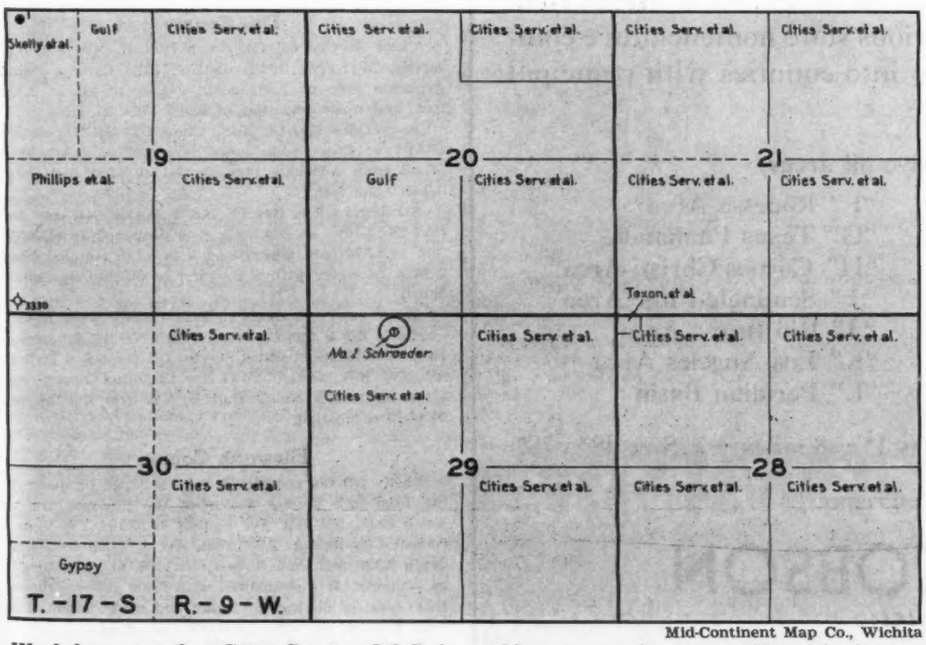
Tom Palmer and others No. 1 Matz, SW SE SE section 8-19-1e, wildcat in Marion County, topped Arbuckle lime at 3,498 feet, had a hole full of water at 3,500-05 feet and was abandoned at 3,520 feet, total depth.

Smith & Price No. 1 Henderson, SW cor. section 25-32-6, wildcat in Cowley County, found Arbuckle lime at 3,330-70 feet, total depth, water intruded and it was abandoned.

Pryor & Lockhart No. 1 Pickens, CWL E half SW section 34-30-14w, Barber County wildcat, was dry and abandoned at 4,745 feet, total depth. Top of Viola lime was 4,420 feet, Simpson sand 4,578 feet, with a show of dead oil at 4,585 feet. Showings of oil also were reported at 3,780 feet, 3,935-45 feet and 4,070-80 feet.

Shell Petroleum Corp. No. 1 Eckart, SE SE SW section 13-16-14w, wildcat in northern Barton County, was abandoned at 3,423 feet, total depth, with 400 feet of water in the hole. Arbuckle lime was topped at 3,382 feet.

Manning & Martin and others No. 1 Lynd, NW NW SW section 16-11-21w, location for a wildcat in Trego County, was abandoned.



Mid-Continent Map Co., Wichita

Work has started at Cities Service Oil Co.'s wildcat in southwestern Ellsworth County

Estimated Daily Production

Estimated daily production of Kansas for the week ending January 8 and for the preceding week was as follows:

	Barrels	
	Jan. 8	Jan. 1
Oxford City	1,250	1,300
Burrton	10,225	10,300
Ritz-Canton	5,100	5,125
Graber	2,050	2,675
Hollow-Nikkel	2,325	2,375
Lerado	1,350	975
Voshell	2,100	2,125
Wellington	2,800	2,800
Ellsworth County:		
Lorraine	2,425	2,675
Other pools	1,125	1,070
Rice-Barton counties:		
Bloomer	2,950	2,925
Chase	4,550	5,000
Geneseo	1,600	2,050
Raymond	1,450	1,250
Silica	9,875	9,250
Keesling	950	750
Hauschild	725	875
Miscellaneous Rice	6,370	7,570
Miscellaneous Barton	6,885	7,230
Russell County:		
Fairport	2,220	1,650
Gorham	1,700	1,610
Russell	1,475	1,510
Sullivan	5,190	6,865
North Trapp	11,710	10,365
Miscellaneous Russell	6,190	7,815
Sedgwick County:		
Valley Center	1,060	1,070
Miscellaneous	2,375	2,520
Ellis County:		
Bemis	5,725	7,275
Miscellaneous	3,620	2,905
Kingman County	705	870
Stafford County	2,545	2,462
Greenwood County	9,750	9,850
Butler County	16,450	16,500
Other fields	25,830	25,213
Total Kansas	162,650	166,600

Barton County

The New Year was off to a fast start in the Barton County fields, with 14 wells being completed the first week in January.

Shell Petroleum Corp. No. 1 Stettinger, NE NW SE section 1-16-14w, had Arbuckle lime at 3,340 feet, total depth 3,370 feet, was acidized and pumped 412 bbls. of oil the first four hours, making potential of 2,473 bbls. of oil, with 50 per cent water.

Same operator's No. 1 Hoffman, SE SE SW section 7-16-13w, topped Arbuckle lime at 3,340 feet, was bottomed at 3,366 feet, pumped 645 bbls. of oil in eight hours and made potential of 1,748 bbls.

Phillips Petroleum Co. No. 2 McClanahan, SW SW SE section 7-16-13w, swabbed 374 bbls. of oil in eight hours, was acidized and made potential of 2,312 bbls. Top of Arbuckle lime was 3,349 feet, total depth 3,364 feet.

Stanolind Oil & Gas Co. No. 3 Stueder, SW cor. section 26-16-13w, had Arbuckle lime at 3,372 feet, total depth 3,378 feet, water intruded, it was plugged back to 3,320 feet in an effort to shut off water, but was dry and abandoned.

Armer & Vernon No. 4 Ainsworth, NE NW SE section 33-16-13w, made potential of 609 bbls. of oil from Arbuckle lime at 3,423-26 feet, total depth.

Herndon Drilling Co. and others No. 1 Arnold, NW NW SW section 19-18-15w, Otis area, produced 45,000,000 feet of gas and was completed in LaMotte sand at 3,480-3,535 feet, total depth.

Lario Oil & Gas Co. No. 2 Rehme, SE SE SW section 15-19-11w, had pay in Kansas City lime at 3,111-12 feet, was bottomed at 3,115 feet, and made potential of 3,115 bbls. of oil. Top of Kansas City lime was 3,050 feet.

Stanolind Oil & Gas Co. No. 1 Thomas, SE SE SW section 35-19-11w, found Arbuckle lime at 3,297 feet, total depth 3,318 feet, plugged back to 3,305 feet,

drilled out 1 foot, acidized and made potential of 326 bbls. of oil.

Magnolia Petroleum Co. No. 2 Roetzel, NE NW NE section 25-20-11w, flowed 128 bbls. of oil in four hours, and made potential of 1,514 bbls. Top of Arbuckle lime was 3,249 feet, total depth 3,260 feet.

Gulf Oil Corp. No. 5 Sessler, NW NW SW section 24-20-11w, had Arbuckle lime at 3,263 feet, total depth 3,278 feet, swabbed 74 bbls. of oil and 14 bbls. of water in four hours, was acidized, pumped 1,011 bbls. of oil and 69 bbls. of water in 10 hours and made potential of 2,690 bbls. of oil, with 102 bbls. of water.

Indian Territory Illuminating Oil Co. No. 2 Bryant, SE NE SE section 23-20-11w, had nothing showing and was dry and abandoned in Arbuckle lime at 3,308-18 feet, total depth.

Stanolind Oil & Gas Co. No. 1 Isern, NE NE SW section 3-20-11w, topped Arbuckle lime at 3,300 feet, total depth 3,318 feet, water intruded and it was plugged back to 3,308 feet. After acidizing and shooting it made potential of 130 bbls. of oil, with no water.

Arvin and others No. 1 Steckel, SW cor. section 1-20-11w, swabbed 105 bbls. of oil in three hours, was acidized, pumped 185 bbls. in four hours and made potential of 1,111 bbls. of oil. Top of Arbuckle lime was 3,279 feet, total depth 3,287 feet.

Ohio Oil Co. No. 1 Kramer, SE NW SE section 9-16-13w, was drilled for a water disposal well and completed at 2,184 feet, total depth, taking 30 bbls. of water an hour.

New work in Barton County: Cities Service Oil Co. No. 1 Bitter E, NW NW NE section 17-16-13w, set surface casing; Shell Petroleum Corp. No. 1 Batt B, SE cor. section 2-16-14w, building rotary rig; Aylward Production Co. No. 2 Wissman, C W half W half NW section 31-18-15w, moving in material; Arvin & Bennett No. 2 Steckel, NW SW SW section 1-20-11w, cellar; C. B. Davis and Gulf Oil Corp. No. 12 Steckel, SW SW SE section 1-20-11w, rigging up rotary; Gulf Oil Corp. No. 2 Spanier, SW NW NW section 12-20-11w, drilling at 912 feet; Magnolia Petroleum Co. No. 3 Roetzel, SE NW NE section 25-20-11w, cellar.

Russell County

Cities Service Oil Co. No. 1 Krug E, SW SW NW section 17-14-14w, Russell County, found Kansas City lime at 3,051 feet, had pay at 3,076-3,136 feet, total depth 3,152 feet, plugged back to 3,136 feet, acidized, pumped 30 bbls. of oil in four hours and made potential of 210 bbls. of oil, with 8 per cent water.

Stanolind Oil & Gas Co. No. 19 Mermis, NW SW NE section 5-14-15w, made potential of 437 bbls. of oil after acid treatment. It had Kansas City pay at 3,067-70 feet, total depth 3,076 feet, plugged back to 3,070 feet.

Same company's No. 1 Mills, NE NE SW section 10-14-15w, topped Gorham sand at 3,271 feet, total depth 3,274 feet, swabbed 242 bbls. of oil in 5½ hours and made potential of 874 bbls.

Cities Service Oil Co. No. 12 Boomhower, SE NE NE section 25-15-14w, had Arbuckle lime at 3,305 feet, total depth 3,311 feet, plugged back to 3,307 feet and pumped 442 bbls. of oil and 500 bbls. of water in 22 hours, completed.

First reports of new activity in Russell County: R. E. Hess and others No. 1 Reinhardt, NE NE SW section 36-12-14w, wildcat, spudded to 160 feet, skidded 20 feet south; W. C. McBride, Inc., No. 2 Jellison, SE NE SW section 19-13-14w, rigging up; Cities Service Oil Co. No. 1 Phinney, SE cor. section 19-14-13w, building rig; R. H. Shields and others No. 5 Letsch, NE NW SE section 27-14-13w, rig; Central Petroleum Co. No. 2 Dortland A, SW NW NW section 4-14-15w, rig; same company's No. 1 Aley A, SW NE NW section 9-14-15w, drilling at 810 feet; J. C. Shaffer, Inc., No. 5 Cram, SE NW SE section 11-14-15w, surface casing; Coralena Oil Co. No. 1 Michaels, NW NE NW section 2-15-14w, surface casing.

Rice County

Continental Oil Co. and associates No. 2 Warner, NW cor. section 6-19-7w, Geneseo district, Rice County, had Arbuckle lime at 3,237 feet, total depth 3,253 feet, made potential of 976 bbls. of oil, acidized, pumped 336 bbls. of oil in four hours and made new potential of 2,016 bbls. of oil.

Sinclair Prairie Oil Co. No. 5 Bolton, NW SW SW section 31-18-7w, made potential of 1,292 bbls. of oil from Arbuckle lime topped at 3,213 feet, total depth 3,228 feet.

Atlantic Refining Co. No. 2 Gossman B, SE SE NW section 8-21-7w, Wherry area, had Conglomerate at 3,327 feet, was bottomed at 3,348 feet, pumped 40 bbls. of oil in four hours and made potential of 96 bbls. of oil.

Skelly Oil Co. No. 1 Volkland B, NW SW NW section 5-18-10w, an old well in the Stumps area, was bottomed at 3,006 feet, acidized and flowed 934 bbls. of oil in three hours.

Sinclair Prairie Oil Co. No. 6 Bolton, SW NW SW section 31-18-7w, was building rotary rig; Cities Service Oil Co. No. 1 Zajic, NW NE SE section 11-18-8w, was a location; Saco Oil Co. and others No. 4 Foote, SE SE NE section 7-20-9w, was moving in material; E. V. Holland No. 1 Malone, NE SW NE section 19-20-9w, was rigging up; Rose Spring Drilling Co. No. 3 Mantel, NW NE NE section 18-20-10w, was a rotary rig.

Ellis County

Cities Service Oil Co. No. 3 Hall B, NW SW NW section 26-11-17w, Bemis district, Ellis County, found Arbuckle lime at 3,382 feet, was bottomed at 3,400 feet, and made potential of 2,995 bbls. of oil.

Lario Oil & Gas Co. No. 3 Cress, SW NE NE section 13-11-17w, Cress pool, made potential of 3,207 bbls. of oil from Arbuckle lime topped at 3,335 feet, total depth 3,338 feet.

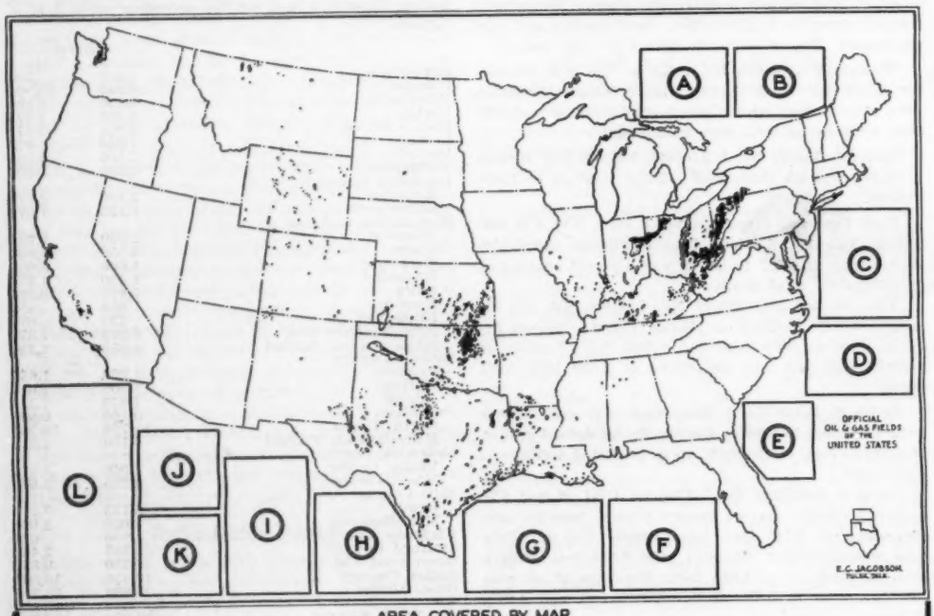
Stanolind Oil & Gas Co. No. 1 Austin, NE cor. section 36-12-16w, an old well, was deepened from 3,057 feet to 3,370 feet, plugged back to 3,110 feet, swabbed 6 bbls. of water with a showing of oil and was abandoned.

Three new operations in Ellis County were reported: Lario Oil & Gas Co. No. 1 Pearl, NE SE SE section 13-11-17w, location; Cities Service Oil Co. No. 6 Hall B, SE NW NW section 26-11-17w, building rotary rig; same company's No. 7 Hall B, NW NE NW section 26-11-17w, location.

Ellsworth County

Skelly Oil Co. completed another large producer in the Ellsworth County sector of the Stumps area at No. 3 Zink, NW SW SW section 32-17-10w. It topped Kansas City lime at 2,939 feet, pay at 3,005 feet, total depth 3,020 feet, and flowed 515 bbls. of oil naturally in 17 hours. It was acidized with 6,000 gallons, flowed 1,229 bbls. of oil in four hours and made potential of 7,327 bbls. of oil, with 7,000,000 feet of gas.

Magnolia Petroleum Co. No. 1 Ehley, NW NW SE



AREA COVERED BY MAP

UNITED STATES MAP

Shows oil fields in green, gas fields in red, with official field names as designated by the various state nomenclature committees. States are broken up into counties with principal towns and cities.

Large scale insets showing the active oil areas:

"A" Michigan Field
"B" Illinois Basin
"C" Western Kansas
"D" Favorable and unfavorable oil areas of the United States
"E" Alaska fields
"F" Rodessa Area
"G" Texas Panhandle
"H" Corpus Christi Area
"I" Seminole-Fitts Area
"J" Rio Bravo Area
"K" Los Angeles Area
"L" Permian Basin

Major map 1″=40 miles Insets 1″=8 miles Size 48″ x 78″

(Folder sent on request)

E. C. JACOBSON

530 McBirney Bldg. Phone 45419 Tulsa, Oklahoma

section 30-17-10w, Bloomer district, had Arbuckle lime at 3,313-34 feet, total depth, water was indicated on drill stem test, and it was abandoned.

Transwestern Oil Co. No. 1 Meyers, SW NW NW section 18-17-10w, Breford area, had Quartzite at 3,303-06 feet, total depth, plugged back to 3,082 feet, and was dry and abandoned.

Magnolia Petroleum Co. No. 6 Andrea, NW SW SW section 7-17-10w, was rigging up rotary.

Reno County

Falcon-Seaboard-Shell No. 2 Priddle, C N half S half SW section 16-24-4w, Burrton area, Reno County, had Chat pay at 3,355 feet, total depth 3,381 feet, plugged back to 3,375 feet, and made potential of 737 bbls. of oil, with some salt water, after acid treatment.

Rush County

Moss Petroleum Co. No. 1 Rodie, NE cor. section 27-18-16w, Rush County, found Granite at 3,599 feet, total depth, and was dry and abandoned.

Stafford County

Amerada Petroleum Corp. No. 1 Teichman, NW NW SE section 12-22-13w, Stafford County, topped Arbuckle lime at 3,792 feet and was dry and abandoned at 4,015 feet, total depth.

New work in Stafford County: J. C. Shaffer and others No. 1 Newell, NE NE SE section 20-24-11w, wildcat, was a rotary rig; Stanolind Oil & Gas Co. No. 2 Ferris, SE NE NW section 23-24-11w, moving in material; Atlantic Refining Co. and Phillips Petroleum Co. No. 1 Lyons, C W half W half NE section 28-24-13w, rigging up rotary.

Butler County

Isador Molk No. 2-A Brown A, C N half S half NW section 32-26-5, El Dorado area, Butler County, had Viola lime at 2,697 feet, total depth 2,724 feet, was acidized and made potential of 45 bbls. of oil.

Cowley County

Arthur Brewer No. 2 Starkey A, SE SE NE section 16-30-4, Cowley County, had Bartlesville sand at 2,755 feet, total depth 2,790 feet, and made potential of 424 bbls. of oil.

Same operator's No. 1 Starkey B, SE SW NE section 16-30-4, topped Bartlesville sand at 2,797 feet and was dry and abandoned at 2,821 feet.

Arthur Brewer No. 1 City of Winfield, SE cor. section 15-30-4, was a location.

Barber County

Barbara Oil Co. No. 2 Holmes D, C NE NE section 28-33-13w, Medicine Lodge area, Barber County, topped Chat at 4,478 feet, pay 4,551 feet, total depth 4,602 feet, and produced 3,500,000 feet of gas.

Same company's No. 1 Holmes B, C S half S half NE section 23-33-13w, produced 1,750,000 feet of gas from Chat at 4,530-4,640 feet, total depth 4,930 feet, plugged back to 4,640 feet.

Olson Oil Co. No. 1 Nuckolls, NE NE SW section 30-31-11w, was building rotary rig. Barbara Oil Co. No. 2 Thompson, C NW section 22-33-13w, was a location.

Grant County

Panhandle Eastern Pipe Line Co. No. 1 McCandless, C SE section 35-30-37w, Grant County, acidized and produced 12,750,000 feet of gas at 2,800 feet, total depth, completed.

United Producing Co., Inc., No. 1 Christain, C SW section 16-30-36w, produced 5,500,000 feet of gas after a shot and was completed at 2,602 feet, total depth.

R. K. Wilson No. 1 Bohnstenget, C SE section 16-28-37w, had gas sand at 2,392 feet, total depth 2,720 feet, was shot and production estimated at 7,500,000 feet of gas.

Stevens County

Kuhn Brothers No. 1 Younggren, C SE section 32-32-38w, Hugoton field, Stevens County, produced 8,368,000 feet of gas after a shot and was completed at 2,715 feet, total depth.

Panhandle Eastern Pipe Line Co. No. 1 Zimmerman, C NE section 35-31-38w, was bottomed at 2,822 feet, acidized and produced 5,281,000 feet of gas.

Same company's No. 1 Cavner, C SW section 33-31-38w, was rigging up rotary; the company's No. 1 Curtis, C SE section 32-31-38w, was a location.

Other New Work

In Sumner County, Magnolia Petroleum Co. No. 1 Lygrisse, C N half NE NW section 11-30-4w, was a location; E. B. Shawver No. 1 Post, NE SW NE section 34-34-2e, was building rotary rig.

In Graham County, Continental Oil Co. and Cities Service Oil Co. No. 1 Trezler, C E half W half NE section 15-9-21w, wildcat, was a location.

In Harper County, Franklin Drilling Co. and others No. 1 Waits, NE NE SW section 24-34-6w, wildcat, was building rotary rig.

Southwest Texas Fields

(Continued from Page 72)

Lambert, perforated casing 5,820-30 feet, 520 bbls., quarter-inch choke. Quintana Petroleum Co. No. 11 Heard, 5,957 feet, perforated casing 5,752-62 feet, 1,560 bbls., quarter-inch choke. Quintana Petroleum Co. No. 60 O'Connor, 5,936 feet, perforated casing 5,918-26 feet, 683 bbls., quarter-inch choke.

Webb County

Killam field: Killam No. 25 Garcia, 1,982 feet, 310 bbls., five-eighths inch choke.

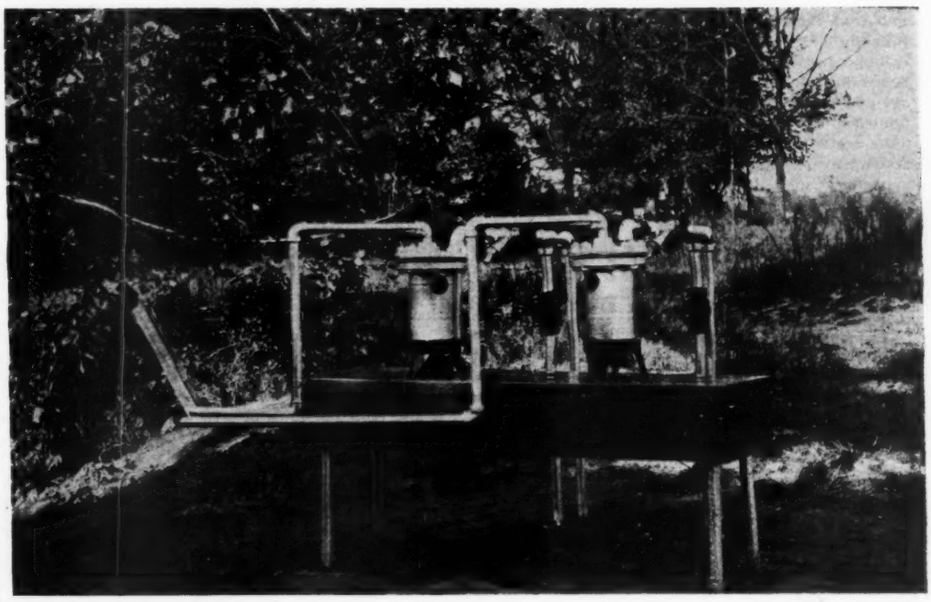
Zapata County

Escobas field: Dunlap Oil Co. No. 31 Trevino, 1,250 feet, 10 bbls., pumping.

Victoria-Calhoun Counties

Heyser field: Sinclair Prairie Oil Co. No. 7 W. H. Bennett, perforated casing 5,740-43½ feet, 8 bbls. per hour, 9/64-inch choke. Normandie Oil Co. No. 8 Cook, 5,744 feet, 135 bbls., one-eighth inch choke. Magnolia Petroleum Co. No. 3 O. M. Lander, 5,745 feet, 66 bbls. in eight hours, 9/64-inch choke. Humble Oil & Refining Co.-Plymouth Oil Co. No. 15 E. H. Welder, 5,479 feet, 16 bbls., three-sixteenths inch choke. Humble Oil & Refining Co. No. 14 E. H. Welder, 5,468 feet, 11 bbls. per hour, three-sixteenths inch choke.

AUTOMATIC DRAINAGE for Gas Pipe Line River Crossings



NEW BULLETIN

Copies of this bulletin will be sent to any reader free on request. If you are interested in steam trap applications, ask for a copy of "The Armstrong Steam Trap Book."

THE use of Armstrong Traps on syphon drains for pipe line river crossings is only one of several interesting applications described in the new bulletin, "Automatic Drainage for Natural Gas Pipe Lines." The above picture shows a pair of No. 313 forged steel traps used for this service in Louisiana. These traps are recommended for gas pressures up to 1000 lbs. per sq. in. At 500 lbs., each has a continuous discharge capacity of 2400 lbs. of water per hour. Other standard sizes are available for higher or lower pressures and for larger or smaller capacities. Complete information on request.

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East and East Central Texas

By MITCHELL TUCKER

NEW CAPITAL ENTERS K.M.A.; FIELD EXTENDED WESTWARD

FORT WORTH, Tex., Jan. 10.—Extensions, new completions, new outpost locations, and important lease sales featured the continually growing K.M.A. field of southern Wichita County, Texas, last week.

During the week four completions were added to the field, with an aggregate potential of 2,640 bbls. per day. Total number of producing oil wells from the deep Kemp City pay zone now number 93. As the week closed there were 37 locations or wells rigging up, and 75 wells drilling in the field. Of this number of drilling wells, 34 are in the process of completion.

The Texas Railroad Commission has issued its first order for the field, setting it up as a separate producing unit from the North Texas stripper areas from which it has formerly been obtaining its allotment of allowed daily production. Under the new order, production will be allocated to individual tracts upon a 50 per cent acreage and 50 per cent potential basis. Well spacing was limited to one well to 10 acres, although the proration units are 20 acres maximum. In order to discourage taking too deep penetrations into the pay section, a maximum potential figure of 500 bbls. daily per well was set in apportioning this half of the field's allowable. Daily average production in the field last week equaled 5,100 bbls. The Texas Pipe Line Co. is taking practically all the new production.

New Operators in Field

The Deep Rock Oil Corporation, Phillips Petroleum Co., Selby Oil & Gas Co., and Lewis Production Co. all entered the K.M.A. field last week through purchase. Deep Rock took 137 acres from J. W. Harris and associates in the E. Durain Survey, west side of the field, for $175,000, of which half was in cash and half to be in oil. Phillips Petroleum Co., active already in the deep exploration of the Rock Crossing field in Wilbarger field, made its entry into the K.M.A. field by the purchase of 260 acres out of the west portion of the H.&T.C. Survey.

Perhaps foremost among the outpost tests of interest is the possible 3½-mile extension to the west being drilled by Geier Brothers & Jackson on the Ancel tract. Total depth of the hole is reported to be 3,990 feet, and operators are setting pipe at 3,960 feet for a test of saturation claimed from 3,962-90 feet.

Consolidated Oil Co. No. 2 W. P. Ferguson was completed as the field's westernmost producer, a south offset to No. 1 Ferguson, in the W. H. Spillers Survey. After topping the Kemp City lime at 3,700 feet, and taking a few feet of penetration, this new well is flowing at the rate of about 35 bbls. hourly.

EAST AND EAST CENTRAL TEXAS

A full status report of each well in the East Texas field, now totaling 24,327, has been ordered filed with the Texas Railroad Commission prior to its next statewide hearing on January 17. This report is to include a list of wells incapable of making their allowables, pumping wells, wells making water, and wells on artificial lift. Justification for the order was given in the fact that such a survey would result in the conservation of crude oil and gas in the East Texas field.

The order called for the following information on wells coming within this classification: Name of operator, lease and well, survey, county, elevation, top of sand or producing horizon of each well, and total depth. It also requests status of each well, as to whether it is flowing, pumping, on air or gas lift, or dead; current allowable; average daily production of oil and water in barrels; the per cent of water, and a statement as to whether or not the well is currently making its allowable.

Opelika Production Test

Tide Water-Seaboard and Humble No. 2 McElreath & Suggett, gas-distillate producer in the Opelika area of Henderson County, is now on a 30-day flowing test. It has shown a considerable decline in production, dropping from 350 bbls. of distillate and 9,000,000 feet of gas to the present rate of 137 bbls. of distillate and 5,340,000 feet of gas through perforated casing and a one-half inch tubing choke. Casing pressure tests 2,150 pounds and tubing pressure 1,975 pounds.

Mexia Deep Test

Pure Oil Co. No. 16-T Kendrick, deep test in the Mexia field of Limestone County, has again encountered trouble. After losing two strings of drill pipe in the hole the well was plugged back from 8,847 to 6,184 feet and casing was perforated from 5,716 feet to 5,725 feet for a test of porous sections in the Travis Peak. Tubing was set at 6,129 feet, and a packer was set at 5,662 feet. After running the swab 10 times, and recovering wash water and slight showings of gas, the line broke. Operators are now fishing for the swab.

Sulphur Bluff Allowable Increased

Daily allowable has been increased 1,500 bbls. in the Sulphur Bluff field of Hopkins County, effective January 6. This raises the field's allowed production from 3,260 to 4,760 bbls. The commission stated that the increase was a step in an effort to replace oil formerly obtained from Mexico.

Anderson County

H. L. Parsons No. 1 G. E. Hemby, wildcat test in the John Gossell Survey, near Elkhart in southern Anderson County, after making a good gas showing from the Woodbine sands from 5,392-5,424 feet, was deepened to 5,457 feet where a core was taken to 5,462 feet, carrying some odor and taste of gas. With the water table presumably only a few feet below operators now plan to take another 3 feet of core and establish its total depth. Should water be encountered, the well will be plugged back and completed as a gasser from the Upper Woodbine sands.

Long Lake Field

F. H. E. Oil Co. No. 2-A J. H. Morrow on the north end of the Lake Long field of Anderson County, appears to have pressures too great to insure completion as an oil producer. The well shows heads of oil and large volumes of gas, with 2,150 pounds pressure on the casing and 1,100 pounds on the tubing.

Kelsey Dome

East Central Texas' closely watched wildcat of the Kelsey dome in Upshur County, Tom Hunter and American Liberty Oil Co. No. 1 Carter, is now coring for the Paluxy at about 4,950 feet in lime and shale. Contract depth is 9,000 feet.

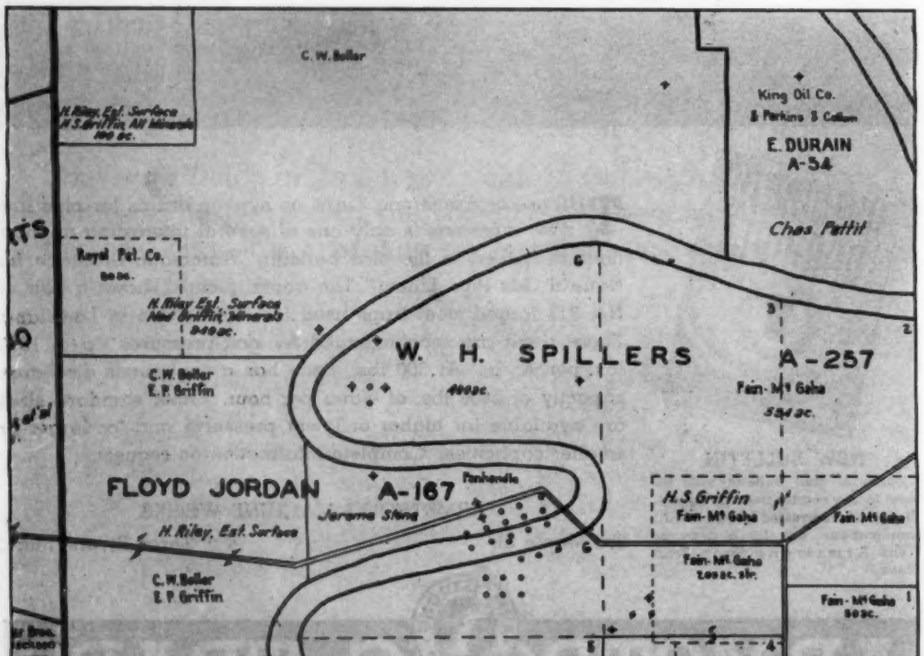
EAST TEXAS FIELD COMPLETIONS

(One-hour gauges)

Gregg County—Longview Area

Amerada Petroleum Co. No. 19 Continental State Bank, 3,590-3,640 feet, 57 bbls.; No. 17 Killingsworth, 3,528-56 feet, 65 bbls.; No. 4 Smith, 3,564-77 feet, 40 bbls. Dolores Oil Co. No. 3 Mattox, 3,620-30 feet, 60 bbls. L. S. Flannery No. 6 York, abandoned location. General American No. 20 Mary Adams, 3,563-69 feet, 60 bbls.; No. 23 Adams, junked and abandoned at 2,900

(Continued on Page 98)



Heydrick Mapping Co., Wichita Falls

Western extension area of the K.M.A. field. To the extreme west is seen Geier Brothers & Jackson No. 1 Ancel, C. Roberts Survey, now on top of the Kemp City lime at 3,977 feet, and indicating itself a producer by early showings of oil. It will mean a 3½-mile southwestern extension to the K.M.A. field if drilling of Kemp City lime yields production

Eastern Field Report

By STAFF CORRESPONDENT

ORISKANY TEST IN JACKSON COUNTY, W. VA., INTO SAND

PITTSBURGH, Pa., Jan. 10.—Additional information and some encouragement was given by a deep test in West Virginia which reached the Oriskany sand in the past week. In Ravenswood district, Jackson County, W. H. Petry topped the Oriskany at 4,698 feet after a Corniferous lime section of 98 feet and at 4,700 feet there was a showing of gas reported as about 20,000 feet a day. At 4,701-04 feet, there was a lime break in the sand and then clear Oriskany sand down to 4,715 feet. The sand was sufficiently porous to be a reservoir. At this depth, the line unstranded and parted with the tools hanging about 400 feet above the bottom and a fishing job is in progress.

The test is near Sandy Summit. After two failures close to the eastern border of the county, and the failure of the deep test in Tucker district, Wirt County, to find the Oriskany sand of sufficient porosity, this test advances the theory that there are possibilities north and west of the great gas pool in Kanawha County. At present the volume of gas is about 50,000 feet a day and the size of the hole is less than 5 inches.

SOUTHEAST OHIO

The best producer for the week in Southeast Ohio is No. 5 of George H. Long No. 6 Account on the William Varner farm, section 14, Fallsbury Township, Licking County. It was completed in the Clinton sand at 3,037 feet and produced 70 bbls. the first day after shot.

In section 24, Hopewell Township, Licking County, Allen Willey and others drilled a second test on the Caldwell and Currie lease through the Clinton sand to 2,950 feet. It had a very light showing of oil and gas and will probably be plugged. In section 6, Perry Township, Striker and Armbuster test on the Stricker and Bucey farm was dry in the Berea sand, total depth 688 feet.

In Athens County, the Fairfield Gas Co. completed No. 4 Varner and Hughes near Coolville, Fraction 3, Carthage Township, in Keener sand at 1,242 feet. It gauged 450,000 feet of gas per day.

In Knox County, the Preston Oil Co. test on the Letha Siddle farm, section 4, Union Township, is a 10-bbl. well in the Clinton sand at 2,835 feet.

In Meigs County, Joseph Ruben and others drilled a dry hole on the Ira Wolf farm, section 25, Sutton Township, through the Cow Run sand to 732 feet.

In Monroe County, J. F. Graham and others completed No. 4 Margaret Scott on Whitten Creek in section 13, Washington Township, in Injun sand at 1,427 feet. It produced 2 bbls. the first day after shot along with a gauge of 30,000 feet of gas. In section 31, Franklin Township, the Hartshorn Brothers completed a second test on the G. W. Hartshorn farm in the Berea grit at 1,985 feet. It is a gas well gauging 150,000 feet a day.

In Morgan County, C. P. Bowman completed a second test on the Charles Woodyard farm, Fraction 24, Marion Township, in the second Berea sand at 1,553 feet. It is a gas well gauging 90,000 feet a day. At Joy in section 2, Homer Township, Orton G. Dunn, completed No. 239 E. R. Dale in the First Cow Run sand at 77 feet and it is a quarter-barrel producer. No. 238 of this operator on the same tract was dry in this formation at 107 feet.

In Muskingum County, Hope Construction & Refining Co. completed No. 3 Ed Morgan in section 5, Licking Township, in Clinton sand at 3,210 feet. It produced 40 bbls. the first day after shot.

In Washington County, R. L. Hanlon completed a test on the Frank Arnold farm 5 miles east of Chesterhill in Lot 1,150, Wesley Township, in the Peeker sand at 321 feet. It produced 3 bbls. the first day after shot. One mile south of Dale, section 29, Wesley Township, H. B. Walker & Co. drilled No. 47 John Sheets through the Mercer sand to 162 feet and it was a dry hole. In Palmer Township, Lot 1,072. 2 miles southeast of Wolf Creek, F. M. Russell drilled No. 5 Joseph J. Lorentz farm through the Cow Run sand to 700 feet and it was a dry hole.

SOUTHWEST PENNSYLVANIA

In Washington County, Pennsylvania, Carnegie Natural Gas Co. completed the test on the P. W. Reynolds farm in Amwell Township at 2,615 feet, the Gantz sand at 2,420-46 feet with gas at 2,444 feet. After a 30-quart shot, it gauged 37,320 feet a day.

In Greene County, the Equitable Gas Co. drilled No. 4 Sanford C. Brock in Wayne Township through the Fifth sand to 3,425 feet and it was dry and abandoned.

In Richhill Township, Greene County, Frye and Fox test on the Hannah Lohr farm at 3,048 feet is a gas well. The Fifty Foot sand was topped at 2,839 feet with a volume of 365,000 feet a day. In this township, Burleigh Wright completed the test on the Rush farm in the Fifty Foot sand at 3,045 feet and it gauged initial 657,000 feet a day.

In Washington Township, Greene County, Charles L. Mong and others are drilling at 2,693 feet in No. 2 Jacob Johns. In Springhill Township, the South West Pennsylvania Gas Corp. is drilling at 1,750 feet in No. 3 Thomas Smith.

In Wayne Township, Greene County, Manufacturers Light & Heat Co. is deepening No. 3,557, Haddie Johnson Ross farm, and the tools are at 2,670 feet. Eddy and Johnson reached 1,740 feet in No. 2 E. W. Maple and have a leaking casing.

In Richhill Township, the Natural Gas Co. of West Virginia has the second test on the D. G. Rush farm down 1,250 feet. O. I. Dille has the rig standing for the test on the Jacob Livingood farm. In Dunkard Township, A. L. Garard is drilling at 2,325 feet, deepening the well on the N. Minor farm.

Deep Tests

In Fayette County, the test of the Potter Development Co., William E. Snee and others on the Summit Hotel property on Chestnut Ridge in South Union Township, is drilling at 5,550 feet. In Allegheny County, the South Penn Oil Co. and others remain shut down in the test on the Chrisian Z. Schove farm in Hampton Township, and are running a survey of the hole.

WEST VIRGINIA

Two producers were reported in West Virginia during the week both of them in Wirt County. In Burning Spring district, the Oil City Trust Co. completed No. 3 Deever in the Salt sand at 2,435 feet as a 10-bbl. producer. In the same district, the Carnegie Natural Gas Co. completed No. 3 Nancy Kidwell which was deepened to the shale at 2,753 feet and it is good for a half-barrel pumper.

Gas Wells

In Calhoun County, L. S. Ayers and others test on the Elliott Chenowith farm in Washington district at 1,774 feet is a gas well in Big Injun sand at 1,718-71 feet with 149,000 feet of gas before shot at 1,733-60 feet.

In Gilmer County, E. L. Bush completed a test on the W. H. Simmons farm in Glenville district at 1,598 feet as a fair gas well. The Big Injun was at 1,575 feet with 1,475,000 feet of gas a day at 1,583-98 feet. In DeKalb district, the Hope Natural Gas Co. completed No. 7,785 on the Fred Gainer farm at 2,204 feet. The Big Injun was at 2,120-80 feet with 237,600 feet of gas before shot at 2,154 feet and 2,167,74 feet. In this district, Glen W. Roberts and others drilled a test on the Gilbert Rhodes farm through the Injun sand to 2,608 feet and it was dry.

In Nicholas County, the Hamilton Gas Co. completed No. 4 on the Kinney and Hawkins estate in Hamilton district at 2,265½ feet. It is a gas well gauging 759,000 feet a day.

In Ritchie County, the Mud Lick Oil & Gas Co. completed a gas well on the R. M. Brissey farm in Union district in the Maxton sand at 1,745 feet and gauged 200,000 feet a day.

In Roane County, the Reedy Oil & Gas Co. drilled No. 3 Maggie Miller, in Curtis district through the Salt sand to 1,800 feet and it was a dry hole.

In Tyler County, F. R. Morrison and others drilled a dry hole on the Grace E. and A. B. Lowther farm in Meade district to 2,026 feet, through the Squaw sand.

In Wayne County, the Owens Illinois Glass Co. completed a test on the L. D. Adkins farm in Union district at 3,334 feet. Brown shale 2,538-3,049 feet with the top of the Corniferous lime at 3,327 feet. It gauged 425,000 feet a day from the Brown shale after shot.

In Wetzel County, Carnegie Natural Gas Co. completed a second test on the David Kennedy farm in Clay district in the Injun sand at a depth of 2,232 feet. It is a small gas well gauging 50,000 feet a day.

In Upshur County, the Central Oil & Gas Co. completed a second test on the J. B. Long farm in Banks district at 1,650 feet. The Big Injun was at 1,431-1,572 feet; with 1,000,000 feet of gas at 1,546-55 feet.

Oriskany Gas Field

Three wells were completed in the Oriskany gas pools in Kanawha County. In Elk district, the Columbian Carbon Co. completed a test on the Patrick and Carte farm at 5,091 feet with the Oriskany topped at 5,041 feet and a gauge of 1,217,000 feet a day before shot. In this district, the same company completed a test on the F. A. Hughart farm at 5,197 feet with the Oriskany topped at 5,130 feet and a gauge of 963,000 feet a day before shot.

In Poca district, Kanawha County, the West Virginia Gas Corp. test on the D. F. Legg farm is a gas well. The top of the Oriskany was at 5,005 feet and it gauged 2,008,000 feet a day before shot.

Only one new location was announced. In Poca district, the United Carbon Co. made a location for a test on the James S. Fisher farm about one-half mile south by west of the J. E. and M. D. Good farm. The surface elevation is 689 feet.

Several wells reached the Corniferous lime during the week and several are drilling in the sand. In Poca district, the United Fuel Gas Co. topped the Corniferous at 4,684 feet in the No. 4,762 on the Mamie A. Ray farm and at 4,636 feet in the No. 4,739 W. J. Glass test. On the Lillie Dawson and others lease this company topped that formation at 4,836 feet. Everett Starcher reached the Corniferous at 5,071 feet in the test on the W. M. Drake farm.

Deep Tests

In Boone County, a deep test was recently completed to the Oriskany sand which did not prove a commercial producer. The Owens Illinois Glass Co. drilled the No. 32 Petonia Coal Land Co. in Sherman district down to the Oriskany. The Big Lime was at 1,956-2,128 feet; Big Injun 2,128-74 feet; Berea 2,614-34 feet; Brown shale 3,323-5,052 feet; Corniferous lime 5,182-5,268 feet; Oriskany 5,268-78 feet. It gauged 105,000 feet a day from the Brown shale 60 hours after shot and had a shut-in pressure of 190 pounds.

In Tygart district, Wood County, W. H. Bickel shot the test on the Resse Blizzard farm through the

(Continued on Page 82)

Rocky Mountain Area

By T. R. INGRAM

13 NEW LEA COUNTY WELLS; EDDY WILDCAT SHOWING OIL

DENVER, Colo., Jan. 10.—The Texas Co. and the California Co.'s important wildcat on the Wilson Creek structure, Rio Blanco County, Colorado, cored 74 feet of completely saturated Sundance sand and is preparing to test. Grand County wildcat has showing of gas above the objective.

The Bunker Hill gas field, Carbon County, Wyoming, discovered by the Ohio Oil Co. last fall, was extended a mile to the south in a small gas well in the Shannon. The New Era Fuel Co. completed a 2,800,000-foot gasser at 525 feet in the Shawnee district. The Stanolind Oil & Gas Co.'s important Beaver Creek wildcat in Fremont County will test gas show in the Frontier at 6,930 feet. The Italo Petroleum Corp. No. 1 Phebus-Government extended the Hamilton dome field three-fourths of a mile to the northwest in a 250-bbl. completion. The Minnelusa Oil Co. No. 3 Joss, on the west side of Lance Creek, made 40 bbls. an hour from the Sundance, initial test.

The Glacier Production Co. No. 1 Reynolds, a mile north of the nearest gasser in the Cut Bank gas field in Montana, was dry and abandoned. Two new operations were started in Kevin-Sunburst.

NEW MEXICO

An eastern Eddy County wildcat, the R. A. Shugart No. 1 Coulthard, C NW SW section 35-18-31, had an increase in sweet oil the past week in sand at 3,884-88 feet, raising its estimated daily capacity from 50 to 75 bbls., swabbing and flowing. It heads when tools are drawn. First pay sand was found at 3,440 feet, with increases noted as drilling progressed. Location is about 10 miles southwest of the old Maljamar pool. It has not been completed.

Fourteen wells were completed in Lea County, including one failure. Completions follow:

Continental Oil Co. No. 1-A-7 State, C NE SE section 7-19-37, topped pay at 3,985 feet, total depth 4,033 feet, with 5½-inch casing set at 3,839 feet. After acidizing, it flowed 58 bbls. of oil in seven hours, with 520,000 feet of gas.

Same company's No. 3-B-24 Reed, C E half SW SW section 24-20-36, was acidized and flowed 261 bbls. of oil in three hours through choke, with gas gauging 2,200,000 feet. Pay was topped at 3,795 feet, the 5½-inch casing was set at 3,746 feet, total depth 3,868 feet.

Gulf Oil Corp. No. 3 Stuart, C SE NE section 10-25-37, found pay at 3,342 feet, set 6-inch casing at 3,293 feet, total depth 3,422 feet. It flowed 20 bbls. of 30.5-gravity oil daily, through choke.

Same operator's No. 2-B Stebbins, C NW NE section 5-22-37, flowed 64 bbls. of oil through tubing in 12 hours Gas gauged 1,724,000 feet. Top of pay was 3,720 feet. total depth 3,759 feet.

Gulf Oil Corp. No. 5 Collins, C SE SW section 14-21-36, was bottomed at 3,865 feet, acidized and shot without results and was dry and abandoned.

Gulf Oil Corp. No. 1-B White, C SE SE section 35-20-36, topped pay at 3,802 feet, total depth 3,860 feet, and flowed 24 bbls. of oil daily through tubing, with 2,000,000 feet of gas.

Same company's No. 2 Kyte, C SW SE section 7-19-37, was acidized and flowed 58 bbls. of oil in seven hours, accompanied by 520,000 feet of gas. The 5½-inch casing was set at 3,839 feet. Top of pay was 3,920 feet, total depth 4,033 feet.

Gulf Oil Corp. No. 3 Cole, C SE NE section 16-22-37, was an abandoned location.

Harry Leonard No. 4 Lanehart, SW NW NE section 21-25-37, had pay at 2,993 feet, total depth 3,035 feet, flowed 65 bbls. of oil daily through tubing, with 2,500,000 feet of gas.

Repollo Oil Co. No. 3 Moseley, NE SW SW section 34-24-37, topped pay at 3,445 feet, was bottomed at 3,493 feet, and set 7-inch casing at 3,194 feet. It flowed 349 bbls. of oil in 16 hours through casing.

Same company's No. 2-B Whitten, NE cor. section 4-24-36, flowed 612 bbls. of oil through tubing in 12 hours. Top of pay was 3,585 feet, total depth 3,640 feet, with 7-inch casing set at 3,582 feet.

Rushwold Oil Co. No. 1 Mattix, C SE NE section 10-24-37, had pay at 3,475 feet, total depth 3,626 feet, and flowed 162 bbls. of oil in four hours through tubing, with 500,000 feet of gas. The 5½-inch casing was set at 3,391 feet.

Southern Oil Exploitation Co. No. 1 Downes, C S half NE SW section 32-21-37, flowed 27 bbls. of oil an hour through choke after acid treatment, with gas gauging 400,000 feet. Top of pay was 3,704 feet, total depth 3,784 feet, and 5½-inch casing was set at 3,615 feet.

Stanolind Oil & Gas Co. No. 1 Thompson, C NE NE section 6-21-37, flowed 20 bbls. of oil through choke in four hours from pay topped at 3,625 feet, total depth 3,770 feet. The 7-inch casing was set at 3,479 feet.

Texas Co. No. 2 Fristoe, NW NE NE section 3-25-37, had pay at 3,355 feet, was bottomed at 3,481 feet, and flowed 78 bbls. of oil in three hours through tubing. Gas measured 565,000 feet.

Neville G. Penrose, Inc. No. 1 Crosby, C NW NE section 18-22-37, was an abandoned location.

Lea County

Amerada Pet. Corp. No. 6 Byrd, SE sec. 12-20-36. Loc.
Amerada Pet. Corp. No. 2 Corrigan, C S½ SE NE sec. 4-22-37. T.D. 3,770 ft.; tstg.
Amerada Pet. Corp. No. 3 Laughlin, C NW NE sec. 9-20-37. T.D. 2,585 ft.; set 8-in. 2,573 ft.
Anderson-Prichard Oil Corp. No. 1 Wells, C SE SE sec. 5-27-37. Drlg. 3,610 ft.
Anderson-Prichard Oil Corp. No. 2 Langlie, SE sec. 8-25-37. Drlg. 3,325 ft.
Atlantic Ref. Co. et al No. 1 Davis, SW NW SW sec. 34-23-36. T.D. 3,552 ft.; drlg. plug.
Atlantic Ref. Co. No. 1 Grizzell, C SE NE sec. 6-22-37. T.D. 3,790 ft.; C.O. at 3,526 ft.
Barnsdall Oil Co. No. 1 Whitten, NE NE NW sec. 4-24-36. T.D. 3,669 ft.; set 7-in. 3,518 ft.
Barnsdall Oil Co. No. 1 J. Whitten, SE cor. sec. 33-23-36. T.D. 3,580 ft.; rng. csg.
Cities Service Oil Co. No. 2-A Clossen, NE sec. 18-22-36. Drlg. 1,293 ft.
Cities Service Oil Co. No. 1-H State, C NE NE sec. 17-22-36. T.D. 3,884 ft.; prep. to deepen.
Continental Oil Co. No. 3-B-6 Elliott, C SE SE sec. 6-22-37. T.D. 3,778 ft.; S.D.
Continental Oil Co. No. 1-B-9 Elliott, NW sec. 9-22-37. Cellar and pits.
Continental Oil Co. No. 3-B-31 Lockhart, SE sec. 31-21-36. T.D. 3,924 ft.; acd.; F. 13 B.F. in 15 hrs.
Continental Oil Co. No. 1-A-31 Marsh, SE sec. 31-20-39. Wildcat. Drlg. 414 ft.
Continental Oil Co. No. 1-B-23 Reed, NE cor. sec. 23-20-36. Drlg. 3,330 ft.
Continental Oil Co. No. 7-A-14 Sanderson, NE SW NE sec. 14-20-36. T.D. 1,140 ft.; set 7⅝-in. csg. 1,130 ft.
Continental Oil Co. No. 4-B-10 Sanderson, NE SE SE sec. 10-20-36. T.D. 1,285 ft.; set 7⅝-in. csg. 1,278 ft.
Cranfill & Germany No. 1 Weir, C NE NE sec. 15-20-37. T.D. 4,210 ft.; S.D.O.
Culbertson & Irwin No. 1 Alston, NW cor. sec. 26-25-37. Drlg. 3,330 ft.
Culbertson & Irwin No. 4-A Humphrey, NE SE NW sec. 3-25-37. Drlg. 2,815 ft.
Culbertson & Irwin No. 5-A Humphrey, NE NW SE sec. 3-25-37. R.U.S.T.
Culbertson & Irwin No. 7-A Humphrey, NE SW SE sec. 3-25-37. Loc.
Culbertson & Irwin No. 1 Liberty Royalty, NW sec. 3-25-37. Drlg. 1,405 ft.
Dalport Oil Corp. No. 1 Leonard, C SE NW sec. 29-26-38. Wildcat. Drlg. 955 ft.
Danglade & Clower No. 1 Clifton, C SW SW sec. 4-22-37. Drlg. 3,280 ft.
Eastland Oil Co. No. 1 Waldrop, C SE SE sec. 1-20-38. T.D. 4,755 ft.; S.D.O.
L. E. Elliott No. 1 Elliott, NE NE SE sec. 26-20-36. Drlg. 2,420 ft.
Emperor Oil Co. No. 1 Johns, C SW NW sec. 24-17-32. T.D. 4,390 ft.; P.B. 4,260 ft.; F. 15 B.O.P.D.; to shoot.
Empire O. & R. Co. No. 1-G State, sec. 2-21-36. T.D. 3,900 ft.; S.D.
Empire O. & R. Co. No. 2-B State, C SE SW sec. 2-21-37. Drlg. 3,575 ft.
J. E. Farrell No. 2-C Walden, C SE SW sec. 15-22-37. Drlg. 3,700 ft.
Geo. F. Getty No. 1 Riggs, NW sec. 1-26-37. Wildcat. Location.
Gulf Oil Corp. No. 1 Boyd, sec. 23-22-37. T.D. 3,681 ft.; testing.
Gulf Oil Corp. No. 2 Cole, C NE NE sec. 16-22-37. T.D. 1,141 ft.; S.D.
Gulf Oil Corp. No. 1 Elliott, SW SE SE sec. 15-25-37. Drlg. 3,398 ft.
Gulf Oil Corp. No. 2 Elliott, C NE SE sec. 15-25-37. Drlg. 718 ft.
Gulf Oil Corp. No. 1 Greer, SW sec. 21-22-36. Drlg. 1,324 ft.
Gulf Oil Corp. No. 2-E Janda, NW NE NE sec. 21-23-36. Drlg. 1,750 ft.
Gulf Oil Corp. No. 1-D Mattern, SW sec. 6-22-37. T.D. 296 ft.; reaming.
Gulf Oil Corp. No. 1 LeMunyon, C NE NE sec. 28-23-37. Old well; T.D. 3,666 ft.; swbg.
Gulf Oil Corp. No. 2 Stebbins, C SW NW sec. 5-22-37. T.D. 258 ft.; set 13-in. 253 ft.
Humble O. & R. Co. No. 3 Williams, C SW NW sec. 34-24-37. T.D. 3,532 ft.
Humble O. & R. Co. No. 1-H State, SW sec. 27-22-37. T.D. 3,670 ft.; testing.
Jal Nat. Gas Corp. No. 2 Justis, NE sec. 20-25-37. T.D. 3,029 ft.; testing.
Harry Leonard No. 1 Ginsberg, NW sec. 29-25-38. Wildcat. Location.
Magnolia Pet. Co. No. 1 State G, NW NW NE sec. 34-17-34. T.D. 4,905 ft.; P.B. 4,794 ft.
Magnolia Pet. Co. No. 2 State-Bridges, sec. 14-17-34. T.D. 4,593 ft.; flow. 51 B.O. in 1 hr., naturally.
Magnolia Pet. Co. No. 3 State-Bridges, C NW SW sec. 23-17-34. Drlg. 3,935 ft.
J. A. Mascho No. 1 Cloyd, C SE SE sec. 20-22-23. Wildcat. T.D. 3,516 ft.; S.D.O.
McDowell & Weiner No. 1 Elliott, SE cor. sec. 19-21-37. T.D. 3,778 ft.; to deepen.
C. T. McLaughlin No. 1 Polhamus, NE sec. 9-24-37. T.D. 3,672 ft.; S.D. for mch.
C. T. McLaughlin No. 1 Imperial Royalties, NW SE NW sec. 9-24-37. T.D. 3,436 ft.; R.U.S.T.
National Drlg. & Prod. Co. No. 1 Flint, C NE NE sec. 29-20-34. Wildcat. Drlg. 3,695 ft.
Ohio Oil Co. No. 2 Grizzell, C NW SE sec. 5-22-37. T.D. 600 ft.; prep. to drill in.
Ohio Oil Co. No. 1 Hardy, NE NE SE sec. 20-21-37. T.D. 3,612 ft.; drlg. by tools.
Ohio Oil Co. No. 1 Kutter D, C SW SW sec. 18-19-37. Drlg. 3,590 ft.
Ohio Oil Co. No. 1 Sanders, NW sec. 1-22-36. Drlg. 255 ft.; S.D.O.
Ohio Oil Co. No. 7 State-McDonald, C SW SE sec. 16-22-36. T.D. 3,871 ft.; C.O.
Lem Peters No. 1 Graham, sec. 27-22-37. Drlg. 2,320 ft.
Parker Drlg. Co. No. 1 Irwin, C W½ SW SW sec. 35-24-37. Drlg. 85 ft.
Phillips Pet. Co. No. 1 Hale, C NE SE sec. 35-17-34. Drlg. 2,775 ft.
Phillips Pet. Co. No. 1 New, C E½ NE NE sec. 26-20-36. Drlg. 1,465 ft.
Plains Prod. Co. No. 1 Humphreys, NE sec. 3-25-37. Location.
Plains Prod. Co. No. 2 Moseley, SW NE SE sec. 34-24-37. Drlg. 2,415 ft.
Repollo Oil Co. No. 1 Powhatan Carter, SW SW NE sec. 9-24-37. Drlg. 3,680 ft.
Repollo Oil Co. No. 3 Christmas, NW NW NE sec. 28-22-37. Drlg. 3,485 ft.
Repollo Oil Co. No. 4 Roach, NW NW SW sec. 21-20-37. T.D. 3,875 ft.; P.B. 3,860 ft.; shot; R.U.S.T.; to C.O.
Repollo Oil Co. No. 4-D Stuart, SW sec. 10-25-37. R.U. S.T.
Repollo Oil Co. No. 2 White, SE sec. 24-20-36. Drlg. 3,645 ft.
Rowan Drlg. Co. No. 2 Elliott B, C NW NW sec. 9-22-37. T.D. 3,733 ft.; P.B. 3,670 ft.
Rowan Drlg. Co. No. 2-A Elliott, C NE SW sec. 27-22-37. Drlg.
Samedan Oil Co. No. 5 Hughes, C NE SW sec. 10-23-37. Drlg. 1,003 ft.
Shell Pet. Corp. and Devonian Oil Co. No. 3 Christmas, C SW NE sec. 21-22-36. T.D. 3,855 ft.; P.B. 3,840 ft.; S.D.
Shell Pet. Corp. No. 2-L Endura-State, NE SE SE sec. 1-21-35. T.D. 3,905 ft.; acd.; F. 10 B.F. in 24 hrs.
Shell Pet. Corp. No. 1 Grizzell, SE sec. 8-22-37. Cellar and pits.
Shell Pet. Corp. No. 4-E State, C SW NW sec. 12-20-36. Drlg. 3,800 ft.
Skelly Oil Co. No. 1-J State, C NE NW sec. 31-17-35. T.D. 4,540 ft.; F. 15 B.O. in 24 hrs.; tstg.
Skelly Oil Co. No. 5 J. B. Baker, C SE NW sec. 27-22-37. T.D. 3,620 ft.; tstg.
Skelly Oil Co. No. 1 E. T. Johns, SW sec. 21-24-37. T.D. 3,575 ft.; F. 355 B.O. in 24 hrs.
Skelly Oil Co. No. 5 G. W. Sims, C SE NW sec. 10-23-37. Drlg. 2,370 ft.
Skelly Oil Co. No. 3 G. W. Sims, C NW NE sec. 9-23-37. T.D. 3,642 ft.; C.O.
Skelly Oil Co. No. 1-C R. R. Sims, sec. 3-23-37. Drlg. 3,688 ft.
Skelly Oil Co. No. 1-E W. P. Sims, C NW NE sec. 10-23-37. T.D. 3,625 ft.; flwd. 452 bbls. in 24 hrs.
Southern Pet. Exploitation Co. No. 2 Downes, C SW SW sec. 32-21-37. Loc.
Stanolind O. & G. Co. No. 13-A Gilluly, C SE NW sec. 24-20-36. Drlg. 2,742 ft.
Stanolind O. & G. Co. No. 1-A Hill, C NW SE sec. 6-21-37. Drlg. 3,543 ft.
W. H. Street No. 3 Woods, C NW NE sec. 22-22-37. Drlg. 2,530 ft.
Sun Oil Co. No. 2 Lanehart, C NE SE sec. 20-25-37. Drlg. 3,168 ft.
Texas Co. No. 2-B Cagle, SW sec. 15-26-37. T.D. 3,216 ft.; tstg.
Texas Co. No. 1 Corbin, C NW SW sec. 10-18-33. Drlg. 500 ft.
Texas Co. No. 3 Falvy, C NW NW sec. 8-22-37. T.D. 3,760 ft.; swbg.
Texas Co. No. 1-M State, NW sec. 1-18-34. Drlg. 4,210 ft.
Texas Pacific Coal & Oil Co. No. 7-A State, Acct. 2, C NW NW sec. 8-22-36. Drlg. 3,430 ft.
Texas Pacific Coal & Oil Co. No. 8-A State, Acct. 2, C SE SE sec. 7-22-36. Cellar and pits.
Two States Oil Co. No. 1 Downes, C NW NW sec. 5-22-37. Drlg. 3,700 ft.

Two States Oil Co. No. 2 Downes, C NE NE sec. 6-22-37. Derrick.
Western Gas Co. No. 1 Cowden, SE cor. sec. 30-23-37. Drlg. 3,560 ft.

Eddy County

F. E. Baker No. 1 Eddy, NE sec. 12-22-27. T.D. 1,800 ft.
Barnett Oil Dev. Co. No. 1 King Permit, C NW SE sec. 23-26-30. Drlg. 260 ft.
Ed Bryant No. 1 Stebbins, C NE SW sec. 19-20-29. T.D. 1,000 ft.; S.D.O.
Carper Drlg. Co. No. 2 Gissler, SW SE NW sec. 23-17-30. T.D. 3,688 ft.; P.B. 3,488 ft.; recmtd.
Danciger O. & R. Co. No. 3 Turner, SW NE SW sec. 18-17-31. T.D. 3,510 ft.; flwg. 40 B.O.P.D.
D. & B. Oil Co. No. 2 Jenkins, SW NW NW sec. 20-17-30. Drlg. 3,250 ft.
Etz Brothers No. 4 State, C S½ SE SE sec. 16-17-30. Drlg. 3,230 ft.
Finley & Cherry No. 1 Buchley, C NW NW sec. 28-16-31. Wildcat; T.D. 3,750 ft.; S.D.
Flint Prod. Co. No. 1-B State, SE sec. 20-17-30. Drlg. 3,830 ft.
Franklin Pet. Corp. No. 1 McIntyre, NE NW SW sec. 20-17-30. Drlg. 3,146 ft.
C. J. Frederick No. 1 Reed, C NE SW sec. 28-24-28. T.D. 1,170 ft.; S.D.O.
F. W. & Y. Oil Co. No. 7-A Gissler, NE sec. 23-17-30. T.D. 3,480 ft.; flwd. 70 B.O.P.D.; reacd.
F. W. & Y. Oil Co. No. 1-B Gissler, SW sec. 15-17-30. Loc.
F. W. & Y. Oil Co. No. 2-B Gissler, C NW NW sec. 24-17-30. Drlg. 2,925 ft.
F. W. & Y. Oil Co. No. 3 Jackson, C NW SE sec. 13-17-30. T.D. 2,953 ft.; fsg.
Geo. F. Getty, Inc., No. 1-E State, NE SW SW sec. 16-17-31. Drlg. 3,250 ft.
Grayburg Oil Co. No. 10 Burch, SE NE NE sec. 19-17-30. Drlg. 2,955 ft.
Grayburg Oil Co. No. 4 Keely, SE sec. 24-17-9. Drlg. 1,293 ft.
M. A. Grisham No. 1 Chaytor, NE sec. 10-24-26. T.D. 1,966 ft.; tstg.
H. A. Hartwell No. 1 Vandagrift, NE NE SE sec. 8-18-27. Drlg. 500 ft.
R. L. Holcomb No. 1 State, NW sec. 22-17-28. T.D. 487 ft.; underdigging csg.
Woodworth Hawkins No. 1 Mack, C SW SW sec. 20-24-27. Drlg. 1,550 ft.
C. F. Ingram No. 1 Page, NE NE SW sec. 15-21-28. T.D. 1,310 ft.; S.D.O.
Nash & Windfohr No. 8-A Jackson, sec. 13-17-30. Drlg. 1,719 ft.
Nash-Windfohr & Brown No. 2-B Stevens, NW sec. 13-17-30. Drlg. 1,810 ft.
W. A. Nichols No. 1 Johnson, NE sec. 35-15-21. Wildcat; T.D. 3,940 ft.; F. 194 B.O.; tstg.
Red Gulch Oil Co. No. 1 State, C S½ SE SE sec. 4-17-28. Drlg. 1,270 ft.
Red Lake Oil Co. No. 1 Williams, C SW NW sec. 21-17-28. T.D. 1,940 ft.; S.D.O.
Repollo Oil Co. No. 3-D McIntyre, SE cor. sec. 17-17-30. Drlg. 2,688 ft.
Repollo Oil Co. No. 1-A Parke, NW NE NE sec. 22-17-30. Drlg. 3,090 ft.
Repollo Oil Co. No. 2 West, SW SE SE sec. 9-17-31. T.D. 3,757 ft.; P.B. 3,739 ft.; to P.B. again.
Paul Sargent No. 1 State, NE sec. 16-17-31. T.D. 3,749 ft.; P.B. 3,745 ft.; tstg.
R. A. Shugart No. 1 Coulthard, C NW SW sec. 35-18-31. Drlg. 3,900 ft.; swbg.; est. 75 B.O.P.D.
Texas Co. No. 1 Welch, sec. 30-20-31. T.D. 316 ft.; set 8¼-in. csg.
W. K. Royalty No. 2 State, C NE NW sec. 16-17-31. R.U. mch.
W. O. Snyder No. 1 Pecos Irrigation, C NE SE sec. 15-25-28. Drlg. 2,960 ft.
Martin Yates, Jr. No. 1 Conlon, SW NW NW sec. 7-24-27. Drlg. 125 ft.

Chaves County

English & Hamon No. 11 Billingslea, SE sec. 9-15-29. T.D. 3,680 ft.; P.B. 3,456 ft.; bailed dry; to re-shoot.
E. J. Fisher No. 1 Etz Permit, NE sec. 23-7s-26. Drlg. 710 ft.
J. & L. Drlg. Co. No. 2 Hurd, SW sec. 11-11-26. M.I.M.
Mathieson et al No. 1 Code, C NE NW sec. 19-15-27. Drlg. 1,160 ft.

Curry County

Bond & Harrison No. 1 Hart ranch, C NW SE sec. 13-2n-31. T.D. 3,258 ft.; S.D.O.

De Baca County

Land Owners Oil Co. No. 1 McAdoo, SW cor. sec. 16-1s-7e. O.W. prep. to deepen from 5,850 ft.
James D. Ward No. 1 Summers, NW NE SW sec. 17-4n-20. Loc.
N. F. Woods No. 1 Jones, C NE SW sec. 17-4n-20. Loc.

Dona Ana County

Jules C. Bertrand No. 1 Casad Permit, sec. 24-26-5e. T.D. 47 ft.; S.D.O.

McKinley County

S. Dysart No. 1 Govt., NE sec. 14-14-10w. T.D. 1,390 ft.; fsg.

Otero County

George Mulvey No. 1 State, SW cor. sec. 11-25-8. T.D. 263 ft.; S.D.
Fred Turner, Jr. No. 1 Ella Everett, C SE SE sec. 34-22-13. R.U.S.T.
Fred Turner, Jr. No. 1 H. V. Everett, C SE SE sec. 28-22-13. Spd. and S.D.

Roosevelt County

C. S. Peterson and Conquistadores Oil Co. No. 1 Good, NW SE SE sec. 28-5s-30. T.D. 450 ft.; S.D.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc., No. 2 North Albuquerque, NE SE NW sec. 19-11n-4e. S.D. 3,750 ft. for csg.

McKinley County

Guarantee Oil Co. No. 1 fee, NW NW NW sec. 31-20n-9w. S.D. 327 ft.
S. Dysart et al No. 1 Bouton, CSL NW NE sec. 14-14n-10w. T.D. 1,390 ft.; re-ran 12¼-in. to 1,320 ft. and S.D.
Bill Forth No. 1 Comanche, C NW SE sec. 29-20n-10w. Drlg. 200 ft.

San Juan County

The Anna Oil Corp. No. 6 Government, SW NE NE section 33-30n-11w, Aztec-Bloomfield district, was completed at 1,495 ft. for 15 bbls. per day initial.

R. C. Oswell No. 6, SE NE section 33-30n-11w, which has been standing for some time, was completed at 1,450 feet for 15 bbls. per day of fluid, 60 per cent water.

Continental Oil Co. No. 69 Rattlesnake, SE NE SE sec. 2-29n-19w. T.D. 851 ft.; tstg.
C. E. Brawley No. 1 Godrun, C SE SW sec. 34-30n-11w. Drlg. below 50 ft.; C.D.
Continental Oil Co. No. 67 Rattlesnake, C SE sec. 2-29-19w. S.D. 800 ft.

Socorro County

Central New Mexico Oil Co. No. 1 Brown, SE NW sec. 16-3n-1e. Drlg. below 2,000 ft.

Valencia County

C. A. Brober et al No. 1 Fuqua, NE NE sec. 19-5n-3e. S.D. 900 ft.; chge. to rotary.
Big Three Oil Co. No. 1 Dailes Townsite, SE SE NW sec. 5-6n-1e. T.D. 6,114 ft.; cmtd. 4-in. liner at 5,971 ft.; trying to S.O.W.

COLORADO

Grand County

The Interstate Oil & Refining Co. No. 1 Hinman, Dirt Creek district, which has begun to attract attention, is drilling in shale showing considerable lime at 2,570 feet with an increase in the showing of gas.

Interstate Oil & Ref. Co. No. 1 Hinman, NE SE NW sec. 11-2n-81w. Drlg. 2,570 ft.

Huerfano County

S. W. Pressy No. 2 Alamo, C SW SE section 3-27n-68w. Drlg. 750 ft. in sh. with S.G.; no water to this depth.
S. W. Preasey No. 1 Ojo, SW NE sec. 10-29n-69w. Recmtg. to S.O.G. at 3,550 ft.

Jackson County

Colorado Oil Ref. Co. No. 1 North Park Coal, NW NW sec. 18-9n-78w. Res. and drlg. at 2,960 ft. in Mancos sh.

Rio Blanco County

The importance of the discovery made two weeks ago in the Morrison formation on the Wilson Creek structure in Rio Blanco County in the joint test of the Texas Co. and the California Co. in their No. 1 Unit, SW SE NW section 35-3n-94w, was increased the past week when 74 feet of saturated was cored in the Sundance horizon. Total depth of the hole at present is 6,918 feet, 1,133 feet above sea level.

The top of the Sundance formation was at 6,787 feet and saturated sand was cored from 6,824 to 6,898 feet. The core from 6,898 feet to bottom at 6,918 feet did not show any saturation. There was evidence of a slight intrusion of water and a Schlumberger survey is being made in an effort to determine the source. It is probable that the hole will be plugged back after the survey is completed and before another test through the drill stem is made. H. A. Stewart and Herman Davies, heads of this division for the Texas and California companies, are at the well.

Prior to drilling into the Sundance the test was a discovery in the Morrison sand. The top was at 6,664 feet. Ninety-seven feet of Morrison sand showing oil was cored. The first 17 feet showed complete saturation and 80 feet mostly was saturated. A drill stem test at 6,664-6,704 feet showed better than 50 bbls. an hour of 46.5-gravity green oil. No report on results of drill stem test in the Sundance has yet been released.

Routt County

The Mid-Colorado Petroleum Co.'s test on Fish Creek has resumed at 2,910 feet and at last report was drilling below 3,120 feet in the Morrison with shows of oil and gas. It is looking for a good casing point to land the 8¼-inch before drilling into the Sundance.

WYOMING

Carbon County

The Ohio Oil Co. No. 1 C. E. Brimmer, C SW SE section 32-27n-89w, Bunker Hill structure, was completed in the Shannon for 1,500,000 feet of gas per day at a total depth of 1,478 feet. Top was at 1,470 feet. Location is a mile to the south and a little east of No. 1 Wyoming Oil & Gas, the discovery well, completed last September for 5,000,000 feet in the Shannon at 1,244-80 feet, and a west offset to its No. 1 C. A. Brimmer, which was abandoned at 2,010 feet.

Converse County

The New Era Fuel Corp. No. 1 Brown-Government, NW SW NW section 25-32n-69w, Shawnee district, was completed at 525 feet for 2,800,000 feet of gas per day with a rock pressure of 105 pounds.

Fremont County

The Stanolind Oil & Gas Co.'s important wildcat on the Beaver Creek structure, 16 miles east of Riverton, is reported to have had gas shows in the Frontier at 6,760-6,930 feet and has stopped to make a drill stem test. This is the first objective for the test contracted to go to 8,000 feet. Operation started in the Tertiary and location was made after two years of scientific investigation of the area.

Hot Springs County

The Italo Petroleum Corp. No. 1 Phebus-Government, NW NW SW section 11-44n-98w, Hamilton dome black oil field, was completed in the Tensleep at 3,206-46 feet, the latter being the total depth for 250 bbls. per day, estimated. It is an outside well on the northwest, three-fourths of a mile ahead of production, and proves up an extension of the pool.

Niobrara County

The Minnelusa Oil Co. No. 3 Joss, NE NE SW section 6-35n-65w, an outside well on the west side of Lance Creek, but on the same structural contour as several producers, was completed in the basal Sundance at a total depth of 3,978 feet for 40 bbls. per hour, or at the rate of 960 bbls. per day. Top of the sand was at 3,943 feet. It is within the area proven for the Minnelusa, but will not be drilled down to that horizon at present.

The Ohio Oil Co. No. 5 Cash-OPC-2, an edge well in the Sundance horizon on the east side, is being completed and will make a small producer in the basal Sundance at 4,131 feet, total depth, 2 feet in the red beds. It had Sundance at 4,091-4,129 feet and in the last test reported made 146 bbls. per day with some water.

The Argo Oil Co. No. 5 Ford, a south offset to its No. 4 Ford, a producer in the Minnelusa, is a location.

Park County

Resolute Oil Co. No. 4 Northern Pacific, C NE NW sec. 2-57n-101w. S.D. 8,657 ft.
Resolute Oil Co. No. 3 Govt., C NE NE sec. 20-57n-101w. S.D. 8,670 ft.
Ohio Oil Co. No. 4 Mack-O.P.C.-4, NE NW NE sec. 30-58n-99w. Drlg. 1,123 ft.

Platte County

Dividend O. & R. Co., Inc., No. 1, CSL NW SW sec. 17-24n-66. Drlg. 2,415 ft.; C.D.

Sweetwater County

Rocky Mountain Drlg. Co. No. 1 Lee, NE NW SE sec. 10-19n-104w. Spdg. 260 ft.
Mountain Fuel Supply Co. No. 1 Agnes Fay, 330 ft. from E line and 1,980 ft. from S line, sec. 18-18n-103w. Drlg. 1,807 ft.
Rocky Mountain Drlg. Co. No. 1 Osborne, SE SE SE sec. 12-18n-104w. Drlg. 2,477 ft.
Mountain Fuel Supply Co. No. 1 Hoyt, SW SW SW sec. 32-19n-103w. Drlg. 1,855 ft.
Mountain Fuel Supply Co. No. 1 Lauzer, NW NW NW sec. 30-18n-103w. T.D. 1,840 ft.; repairing rig following damage when gas pocket caught fire.
Mountain Fuel Supply Co. No. 1 Clark, NW SE SW sec. 12-19n-104w. S.D. 300 ft.
Italo Pet. Corp. No. 1 Govt., SW SW SW sec. 36-13n-95w. S.D. 610 ft.
Sinclair-Wyoming Oil Co. No. 77, SE NE NE sec. 10-26n-90w. Drlg. 3,949 ft.; near top Tensleep.
Mountain Fuel Supply Co. No. 1 Union Pacific, C SW SE sec. 13-17n-104w. T.D. 3,330 ft.; P.B. to 3,241 ft.; S.D. for winter.
Mountain Fuel Supply Co. No. 1 Union Pacific, C SE NE sec. 29-15n-104w, S of Baxter Basin. Loc.

Uinta County

E. A. Ottman et al No. 1 Govt., C SE NW sec. 26-14n-110w. Drlg. 1,230 ft.; S.S.O.

Washakie County

Lewis Storm No. 1 Brome, C SE SW sec. 30-48n-90w. S.D. 1,750 ft. for csg.

MONTANA

The Toronto Pipe Line Co. discontinued the posting of prices for Cut Bank crude as of January 1. This move followed similar action by the International Pipe Line Co. a few weeks ago. Purchases are now made by these companies on a contract basis only.

Montana gasoline sales in November were 11,158,894 gallons, of which 3,598,996 gallons were imported and 7,589,898 gallons were refined in Montana. Total sales compare with 12,677,749 gallons in October.

Big Horn County

P. O. Oil & Gas Co. No. 1, NW NE NE sec. 25-9s-35e. S.D. 339 ft.
E. L. Dana No. 1 Hardy, SW NW sec. 22-9s-35e. S.D. 700 ft.

Carbon County

R. C. Tarrant No. 2 Heare, NW SE NW sec. 14-6s-10e. Cmtg. cave at 1,610 ft.
Miracle Oil Co. No. 2, CWL NE SE sec. 3-6s-23e. S.D. 1,640 ft.
Geo. Muth et al No. 1, CSL SE SE sec. 23-6s-23e. S.D. indef. at 1,500 ft.
Henderson Prod. Co. No. 1-H-11 Elk 11, SE SE NW sec. 35-9s-23e. S.D. 1,626 ft. for 8¼-in.; top Frontier 1,608 ft.; small S.O.
Sha-Wa Pet. Co. No. 1 Govt., SW SW NE sec. 35-9s-23e. Drlg. 10-in. hole at 2,290 ft.
Sha-Wa Pet. Co. No. 2 Govt., SW SE NE sec. 35-9s-23e. Loc.; Greybull sd. test.

Glacier County

The Glacier Production Co. No. 1 Reynolds, C W half W half SE section 15-36n-5w, a mile north of the nearest producer in the gas area of the Cut Bank field, was plugged and abandoned at 2,840 feet, about marking the limits of the gas field on the north. The

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Moulton sand at 2,635-53 feet was dry. There was no Sunburst sand. There was a small quantity of water in the Cut Bank at 2,740-2,819 feet. Elevation is 4,115 feet.

A. B. Cobb No. 1 State, C NE NE sec. 30-37n-4w. T.D. 2,592 ft.; S.D. until spring.
Jack Marshall No. 2, All.-119, SE SE NW sec. 1-32n-6w. Drlg. 640 ft.

Hill County

W. E. Drought No. 1, SE NW SE section 29-32n-16e, south of the town of Havre, which was drilled for a gas supply for the municipality, was abandoned at around 1,040 feet and rig moved to a location at the south end of the Box Elder dome, following the reinstatement of an allotment by the P.W.A. for $90,000 toward construction of a municipal gas system if a dependable supply of gas is found within 10 miles of the town.

W. E. Drought No. 1, C SW SE sec. 12-34n-17e. M.I. mach. (first report).

Judith Basin County

Fletcher E. Hunt No. 3, NW SE NE sec. 30-14n-15e. S.D. 1,760 ft.; C.D.

Lewis and Clark County

Lewis & Clark Oil Synd. No. 1 Lewis & Clark, NW NW SW sec. 11-18n-5w. Drlg. 1,190 ft.

Park County

Ben W. Ryan et al No. 1 Burgess, SE SW NW sec. 28-2s-11e. S.D. 1,250 ft.

Petroleum County

O. B. Canfield No. 2 Govt., SE SE NE sec. 21-17n-24e. Drlg. 750 ft.; set 5 5/8-in. for W.S.O.

Toole County

Two new operations were reported in the Kevin-Sunburst field and one other well was drilling. All other operations are shut down.

West Kevin Community Lease, Inc. No. 1 McClary, SW NE NW sec. 3-34n-4w. Drlg. 400 ft. (first report).
Superior Pet. Co. No. 7 Govt., NE NW NW sec. 12-35n-3w. Spdg. (first report).
R. G. Parrant No. 1 Anderson, C SW SE sec. 26-35n-4w. S.D. 90 ft.
Henry Vander Pas No. 1 Thompson, SE NW NW sec. 33-35n-3w. Drlg. 950 ft.
E. O. Phelps No. 1 Govt., C NE SE sec. 25-36n-3w. S.D. 10 ft. (formerly Guy Smith).
Coeur d'Alene Oil Trust No. 2 Anderson, NE SW SW sec. 8-35n-1w. Drlg. 1,470 ft.
West Kevin Community Lease, Inc., No. 1 McClary, SE NE NW sec. 3-34n-4w. Drlg. 160 ft.
Chas. Grant et al No. 1 Anderson, SE NE NE sec. 26-35n-4w. Spdg.
Big West Oil Co. No. 7 McDonald, NW NE NE sec. 19-35n-2w. S.D. 1,617 ft.
Welch Bros. No. 2 Ward, SW SE NE sec. 29-35n-3w. S.D. 1,655 ft.
Plotke & Rader No. 11 Fryberger, NW SE SE sec. 29-35n-3w. S.D. 1,698 ft.; S.O.
Hamilton & Hamilton No. 4 Reeg, SE SW SE sec. 14-35n-2w. S.D. 450 ft.
C. T. Olen No. 7 Engemoen, C NW NW sec. 14-35n-2w. T.D. 1,607 ft.; contact 1,591 ft.
E. O. Reichoff No. 3 Baum, SW SW SE sec. 3-35n-3w. S.D. 10 ft.
Bryant Bros. No. 1 Lashbaugh, NE SW NW sec. 34-25n-2w. T.D. 850 ft.; R.U. heavier mach. to resume.

Outside Kevin-Sunburst

Montana Gas Corp. No. 2 Clark, C SE SW sec. 24-37n-1w. S.D. 2,180 ft.

Yellowstone County

Riverton Oil Co. No. 1 Fox, CEL NW NE sec. 14-2n-23e. Top Dak. 1,800 ft.; rng. csg.
Broadview Dome Oil Co. No. 1, NE NE SW sec. 18-3n-23e. T.D. 4,147 ft.; tstg.
Lauriel Oil Co. No. 1, C NW SW sec. 7-2s-24e. S.D. 200 ft.

UTAH

Daggett County

Mountain Fuel Supply Co. No. 3-B Murphy, NW NW SW sec. 23-3n-24e. Cmtd. 13⅜-in. at 323 ft. and S.D. for winter.
Sormir Pet. Corp. No. 1 State, SE SE NW sec. 16-3n-24e. Loc. to be drilled next spring.

Grand County

Colorado-Utah Exploration Co. No. 1 Leib-Govt., SW sec. 32-23n-21e. R.U.C.T.
Utah Southern Oil Co. No. 1 Hyde, SE NW NW sec. 33-22s-22e. T.D. 6,715 ft.
Columbia Crude Corp. No. 1 Rath, NW SW SE sec. 12-25s-20e. T.D. 2,400 ft.; tools out; C.O.
Cane Creek Oil Co. No. 1 Govt., NW SW sec. 31-26n-21e. T.D. 857 ft.; rmg. to set 12½-in.

Summit County

Longwell Pet. Co. No. 1, SE SW SE sec. 35-3n-5e. T.D. 2,502 ft. in sh.; prep. to lower 6⅝-in. for W.S.O.

NEBRASKA

Keith County

Twentieth Century Oil Co. No. 1 Stuken, C NW NW sec. 21-14n-37w. Drlg. 1,700 ft.

Jefferson County

L. R. Page et al No. 1 Bonham, C SE SE sec. 1-1n-1e. Drlg. Sil. L. 3,283 ft.; 6¼-in. at 3,197 ft.

Dawes County

Stephens Oil Corp. No. 1 Palmer, C NW SW sec. 1-33n-50w. Drlg. 3,005 ft. in Upper Morrison.

NORTH DAKOTA

Williams County

California Co. No. 1 Kamp, C NW NE sec. 3-154n-96. Drlg. below 6,264 ft.

"NOT A SINGLE WELL DOWN DURING THE BLIZZARD!"

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Four Lengths,
Four Plungers

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Ask to see this pump at your supply store.

WALTER O'BANNON CO.
Tulsa, Oklahoma

O'BANNON
DELUXE
PUMPS

Oklahoma Operations

By DAL DALRYMPLE

TESTING PAYNE DISCOVERY; MORE ACTIVITY AT CEMENT

The new Ramsey pool, southwest of Stillwater in Payne County, held the spotlight in Oklahoma oil activity the past week, but the old Cement area of Caddo County shared in the general interest as a result of recent developments in that sector.

Mid-Continent Petroleum Corp. and others No. 1 Ramsey, SW SW NW section 18-18-2e, Payne County discovery, continued to be tested, with estimates of daily potential ranging from 10,000 to 14,000 bbls. of oil. It flowed as high as 555 bbls. in one hour and 780 bbls. in 1 hour and 25 minutes when opened last Thursday. On the following day, with the three-fourths inch choke opened only two turns, it flowed 55 bbls. of oil an hour for two hours. With the choke opened an additional half turn, the third hour it flowed 70 bbls., and with the opening increased another quarter turn, the fourth hour it flowed 75 bbls. of oil. It was bottomed in Wilcox sand at 4,795 feet. Gas gauged 7,300,000 feet upward and had gasoline content of 1.8 gallons per thousand cubic feet. Bottom-hole temperature was reported at around 120°, but friction in choking back the flow was blamed for the high temperature. Additional locations in the new pool were expected to be announced this week.

In the Cement field, Ray Stephens No. 2 Griffin, SE NE SE section 27-6n-10w, on the farm of H. W. Griffin of New York City, was estimated good for 500 to 600 bbls. of oil and 15,000,000 feet of gas daily. Work was started at No. 3 Griffin, SW NE SE section 27-6n-10w.

Magnolia Petroleum Co. No. 6 Sames, SE SE NE section 35-6-10w, on the west side of the field, at plugged-back depth of 4,478 feet, gauged 34,200,000 feet of dry gas daily. Derrick was to be skidded to No. 10 Niles, SW SW NW section 36-6n-10w. Other new tests starting in the area included Willard Miller No. 2 Garner, SW NW SW section 26-6n-10w; W. L. Kistler No. 2 Hedlund, SW NE NE section 11-5n-9w, and same operator's No. 2 Rigney, NE NE NW section 12-5n-9w.

Wildcat Reports

Anthony & Marshall No. 1 Fruin-Eckman, SE SE SW section 4-16-1e, a long-idle wildcat in Logan County, at which work was started three or four years ago, finally was abandoned at 5,285 feet, total depth. It originally topped Wilcox sand at 5,265 feet, total depth 5,285 feet, salt water intruded, it was plugged back and various efforts to make a producer were unsuccessful.

F. S. Freeland and others No. 1-A Watson, NE NW NW section 28-28-1w, wildcat in Kay County, was reported as an abandoned location.

Carter Oil Co. and Norbla Oil Co. No. 1 Osage, NW cor. section 3-24-6, was location for a wildcat in Osage County.

H. R. Hollenback and associates No. 1 Wilson, NW NW SE section 36-10-1e, wildcat in Cleveland County, was digging cellar and pits.

Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 1 Ridgeway, NW NE NE section 24-3s-9, new Atoka County wildcat, was a location.

Southern Oil Co. No. 1 Henry, NW NW NE section 10-8s-7e, wildcat about 1½ miles from the Red River in Bryan County, set surface casing at 171 feet and was drilling below 850 feet in shale.

Pontotoc County

Deep Rock Oil Corp. No. 2 Garrett, SE NE SE section 3-1n-7, Jesse area, Pontotoc County, topped Hunton lime at 3,840 feet, Sylvan shale 4,053 feet, total depth 4,060 feet, was acidized with 7,000 gallons, flowed 740 bbls. of oil net in 4½ hours through tubing and had estimated potential of 3,072 bbls.

Continental Oil Co. No. 1 Pettyjohn, SW SW section 1-1n-7, found Hunton lime at 3,758 feet, Sylvan shale 4,050 feet, was bottomed at 4,053 feet, acidized and produced 8,500,000 feet of gas.

H. L. Blackstock and Magnolia Petroleum Co. No. 2 Steed, SE NE NE section 35-2n-6, Fitts district, flowed 41 bbls. of oil in 24 hours and was completed at 4,060 feet, total depth. Top of Hunton lime was 3,820 feet. It was acidized with 10,000 gallons.

J. E. Crosbie, Inc., No. 4-B Harden, SE SW NE section 30-2n-7, an old well, was plugged back from 3,577 feet to 2,850 feet, perforated casing and shot, pumped 10 bbls. of oil daily and was recompleted.

E. H. Moore No. 12 Schauers, SE NE NW section 29-2n-7, an old well, plugged back from 3,748 feet to 2,800 feet, perforated casing, shot, pumped 52 bbls. of accumulated oil in 15 hours and pumped off.

In the Bebee pool, McCollum & Forbes No. 3 Layne, SW NE NW section 30-5-5, had Viola lime at 2,330 feet, total depth 2,500 feet, was shot and swabbed 144 bbls. of oil in eight hours, pumping 110 bbls. in 24 hours.

Lake Oil Co. No. 1 Summers, SW NW SW section 25-5-4, topped Viola lime at 2,465 feet, total depth 2,573 feet, was shot and swabbed 101 bbls. of oil in 24 hours.

Seminole County

J. F. Smith and others No. 1 Austin, NW NE SE section 32-7-6, Dora pool, Seminole County, found Boggy sand at 2,885 feet, was bottomed at 2,945 feet in sand, shot and flowed 274 bbls. of oil in 24 hours.

Sinclair Prairie Oil Co. No. 1 Jones, SE cor. section 9-8-6, an old well, was plugged back from 4,369 feet and recompleted in new hole at 3,392 feet for estimated potential of 20 bbls. of oil, with 50 bbls. of water.

Arrow Drilling Co. and Kemrow Drilling Co. No. 1 Adams, NE NE SE section 33-8-7, had Booch sand pay at 3,195-3,218 feet, total depth 3,310 feet, plugged back to 3,218 feet, and pumped 12 bbls. of oil in 24 hours.

Merva No. 1 Johnson, SE NW NE section 10-10-8, an old well in the Cromwell pool, was plugged back from 4,166 feet to 3,910 feet, shot, acidized, produced 10,800,000 feet of gas, flowed 60 bbls. of oil in 24 hours and was recompleted.

Bert Aston No. 2 Huddleston, SE SW NW section 32-6-6, had a hole full of water and was abandoned at 1,720 feet, total depth.

Mid-Continent Petroleum Corp. No. 17 Fleet, NE SW SE section 7-5-8, Allen pool, an old well bottomed at 4,140 feet and pumping 10 bbls. of oil daily, was shot and was to be acidized.

Pottawatomie County

Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 5 Rushing, SE NW SE section 32-11-4, Shawnee pool, Pottawatomie County, found Earlsboro sand at 4,375 feet, total depth 4,425 feet in sand, and flowed 271 bbls. of oil through casing in 24 hours.

Gulf Oil Corp. No. 2 Lulu, SE NW NW section 13-7-4, St. Louis district, had Calvin sand at 3,096 feet, total depth 3,134 feet, was shot and flowed 156 bbls. of oil through casing in 24 hours.

Magnolia Petroleum Co. No. 3 West, SE SW NE section 26-6-4, had Viola lime at 3,308 feet, pay 3,379 feet, total depth 3,534 feet, plugged back to 3,524 feet, acidized and swabbed 40 bbls. of oil net in 24 hours.

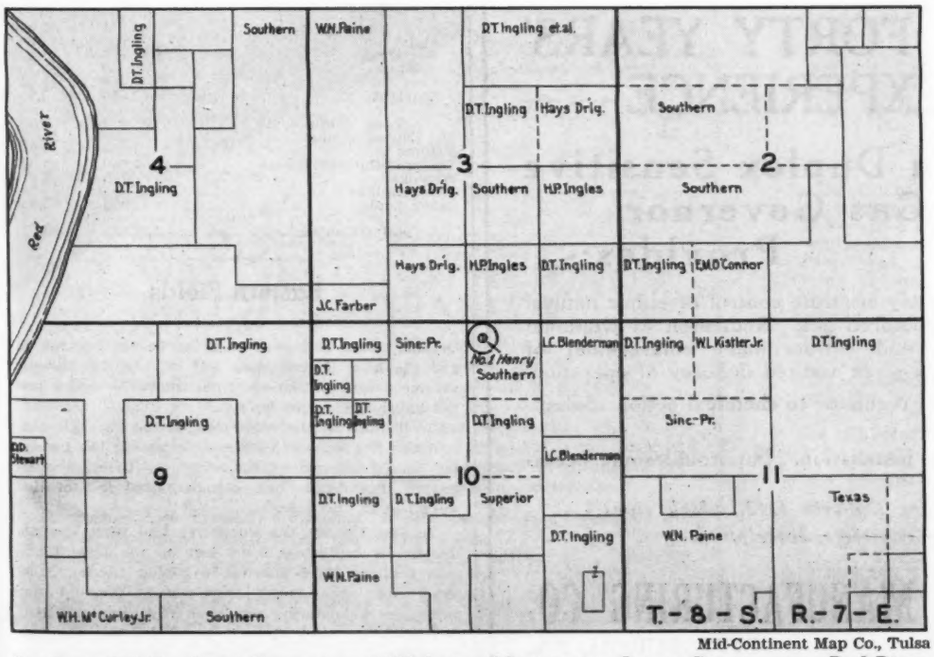
Magnolia Petroleum Co. No. 3 Green, SE SW NW section 13-7-4, was rigging up rotary. Indian States Oil Co. No. 1 Hickey, SE SE NW section 32-11-4, had dug cellar and pits.

Logan County

Sinclair Prairie Oil Co. No. 1 Knecht, C N half S half NE section 28-18-4w, Lovell area, Logan County, uncovered a new gas horizon for that district. It was bottomed at 4,240 feet, plugged back to 3,440 feet, drilled out to 3,494 feet and gas gauged 22,900,000 feet, with 1,340 pounds rock pressure, completed. Production was from sand at 3,490-3,515 feet.

Hall & Briscoe and others No. 1 Schlopp, SW NW SE section 32-20-2w, Lucien area, Logan County, was abandoned at 204 feet, total depth.

Incorporated Petroleum Producers and others No.



Mid-Continent Map Co., Tulsa

Southern Oil Co. No. 1 Henry is a 5,000-foot wildcat test in Bryan County, near Red River

5, No. 6 and No. 7 Schlopp, all in section 32-20-2w, were abandoned locations.

Oklahoma County

Indian Territory Illuminating Oil Co. No. 8 Bodine, NE NE SE section 24-11-3w, Oklahoma City field, Oklahoma County, had sand at 2,947-73 feet, total depth, swabbed 345 bbls. of oil in 24 hours and was completed.

Southwest Petroleum Co. No. 1 Shelton, NE SW SE NE section 35-12-3w, was a rig. H. R. Hollenback and others No. 1 Harding, SW SW SE NW section 15-12-3w, had dug cellar and pits.

Lincoln County

Buell & Herndon No. 1 Thomas, C SW SW section 10-13-6, Laffoon pool, Lincoln County, topped Hunton lime at 4,062 feet, total depth 4,088 feet, was acidized and produced 3,600,000 feet of gas with 1,472 gallons of gasoline daily.

Osage County

Lewis Production Co. No. 6 Osage, SW NE NE section 20-24-7, Osage County, was completed as a repressure well at 2,669 feet, total depth. It had estimated production of 15 bbls. of oil in 16 hours.

Wolverine Oil Corp. No. 53 North Avant Unit, NW SW NW section 32-24-12, was completed for one-half barrel of oil and one-half barrel of water at 1,724 feet.

E. O. Platter No. 9 Osage, NW SE NW section 13-21-8, was dry and abandoned at 1,330 feet, total depth.

New work in Osage County: Anderson & Kerr No. 1 Osage, NW NW SE section 20-21-9, location; Cortez No. 10 Osage, NE SW SW section 24-25-11, location.

Okfuskee County

Earl Evans and others No. 3 Gooden, SE NW NW section 36-10-8, new operation in the Olympic pool, Okfuskee County, set surface casing at 60 feet and was waiting on cement.

Carter County

Pure Oil Co. No. 5 Moyer, NE SE NE section 6-4s-3w, Healdton field, Carter County, had oil sand series beginning at 934 feet, total depth 1,274 feet, plugged back to 1,140 feet and pumped 4½ bbls. of oil daily.

Sinclair Prairie Oil Co. No. 17 Richards, NE SW NW section 9-4s-3w, lost hole and was abandoned at 920 feet.

New activity in Carter County: H. F. Potts No. 2 Johnson, SE cor. section 10-1s-2w, was rigging up machine; Magnolia Petroleum Co. No. 14 Thompson, SE NE NW section 9-4s-3w, had dug pits; Sinclair Prairie Oil Co. No. 17-A Richards, NE SW NW section 9-4s-3w, was rigging up machine.

Stephens County

George L. Pace and others No. 3-C Gilworth, SW SW NW section 2-2s-8w, Stephens County, was dry and abandoned at 2,215 feet, total depth.

New work in Stephens County: Carl Carter No. 1-A Warden, NE NE SW NE section 34-1s-5w, an old well, was bottomed at 908 feet and running 5⅛-inch casing; Adams-Prince No. 2 Frensley, NE SE SW NE section 34-1s-5w, was drilling at 1,165 feet; George L. Pace and others No. 5 Pitts, SE NW NE SE section 3-2s-8w, was a location.

Caddo County

New operations in the Cement district, Caddo County, were as follows: Wasteka Oil Co. No. 3 Griffin, SW NE SE section 27-6-10w, cellar and pits; Phillips Petroleum Co. No. 1-B Yule, SE NW SW section 1-5-9w, location; W. L. Kistler No. 2 Hedlund, SW NE NE section 11-5-9w, pits.

Jefferson County

Palmer & Palmer No. 1 Ryan, SW SW SE section 8-6s-6w, southern Jefferson County, was dry and abandoned at 2,604 feet, total depth.

Palmer and others No. 4 Grayson, SW SE SW section 19-6s-5w, was building derrick. O. E. Teagarden No. 2 Penneston, SW section 16-7s-5w, was a location.

Noble County

Ohio Oil Co. No. 1 Masheters, NW SE NE section 24-22-2e, Marathon pool, Noble County, had first Wilcox sand at 4,409-18 feet, second Wilcox sand 4,441-4,504 feet, total depth 4,567 feet, plugged back to 4,447 feet, and pumped 15 bbls. of oil and 10 bbls. of water daily.

Estimated Daily Production

Estimated daily production of Oklahoma for the week ending January 8, and for the preceding week was as follows:

	Barrels	
	Jan. 8	Jan. 1
Allen	5,875	5,975
Billings	7,500	7,500
Burbank	7,850	7,875
South Burbank	13,750	13,900
Balance Osage	18,500	18,500
Blackwell district	5,225	4,900
Bristow-Slick	7,025	7,000
Chandler	2,500	2,650
Crescent	8,025	7,750
Cromwell	3,375	3,250
Cushing-Shamrock	10,750	10,800
Duncan district	4,050	4,250
Edmond	9,200	10,250
Fish	4,425	4,600
Fitts	68,850	73,300
Jesse	3,525	3,400
Graham	4,275	4,300
Gray	1,200	1,150
Healdton	9,450	9,500
Hewitt	4,200	4,175
Holdenville	825	850
Keokuk	7,625	6,700
Konawa	1,525	1,525
Lucien	11,300	12,250
Moore	9,300	9,750
Oklahoma City	120,975	109,550
Olympic	6,950	6,975
Polo	750	700
Sasakwa and townsite	2,550	2,900
Sholem-Alechem	3,025	3,000
Seminole County:		
Bowlegs	10,525	10,750
Carr City	4,550	5,150
Earlsboro	6,025	5,575
South Earlsboro	625	675
East Earlsboro	6,400	6,425
Little River	9,225	9,075
East Little River	1,075	1,050
Maud	600	600
Mission	1,875	1,825
Seminole	8,650	8,750
East Seminole	1,775	1,725
Searight	3,850	3,850
Total Seminole	55,175	55,450
St. Louis-Pearson	18,625	18,475
Tatums	6,525	6,500
Tonkawa-Garber-Thomas	4,650	4,500
Wewoka	2,700	2,675
Yale-Jennings	3,875	3,900
Other pools	82,900	82,950
Total Oklahoma	538,825	533,675

Eastern Fields

(Continued from Page 77)

Oriskany sand and after shot the bailer was run in and the hole did not show any oil nor did the gas volume increase. The test will stand 24 hours and the bailer will again be run.

In Tucker district, Wirt County, the Carnegie Natural Gas Co. reached 5,518 feet deepening the test on the W. O. Caplinger farm below the Oriskany sand and at that depth the tools and 4,800 feet of line were lost in the hole.

In Clay County, the Pittsburgh and West Virginia Gas Co. is drilling at 5,400 feet on the Jesse Chapman farm in Otter district. In Ripley district, Jackson County, the Potter Development Co. did not make any hole during the week nor were the tools recovered. In Steel district, Wood County, the Belmont Quadrangle Co. is fishing at 4,000 feet in the test on the C. D. White farm.

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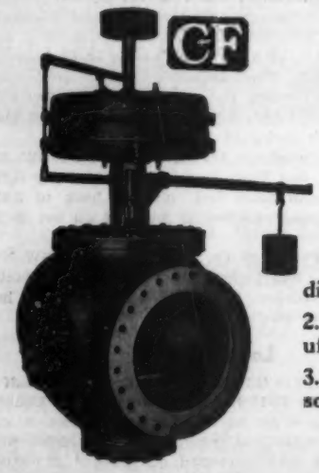

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Michigan Field Report

By
O. C. PRESSPRICH

CRUDE PRICE CUTS SPREAD TO EVERY MICHIGAN FIELD

SAGINAW, Mich. Jan. 10.—A 15-cent cut in the price of oil has been made by the various purchasers of crude in the Midland and other areas including Porter, Greendale, Sherman, Crystal, Chippewa, Beaverton, Allegan and on equal grades in other pools, bringing the price down to $1.12 and Buckeye crude to $1.09½. Arenac and Ogemaw had already suffered a 29 cent cut to 80 cents.

The Midland cut was made effective by the Pure Oil Co. on January 5 and was adopted by Simrall Corp. on January 8 and extended to the Buckeye field.

West Branch and Arenac Fields

The Arenac and West Branch fields received a price cut of 29 cents on December 29 by both Simrall Corp. and the McClanahan Pipe Line Co.

Bay County's bid for a producing oil well brightened the past week as an oil showing was reported at Gulf Refining Co. No. 1 Marston, SE SW NE section 1-14n-4e.

The well made three separate oil showings late in the week, with a small amount of gas present. It was drilling 200 feet below the top of the Dundee, with all structures running high. So far it had failed to gauge a commercial flow.

The Bay County prospect, together with a dry hole in Secord Township of Gladwin County—its first; two producers and a dry hole in the Allegan-Salem field, and another apparent Arenac-Adams producer joined with five natural producers in Buckeye to highlight the week's activities in Michigan's oil fields. Developments of the week lacked color other than the apparent Bay County show, with Buckeye continuing to contribute producers in proved areas and with dry holes rare. Edge tests in an effort to expand the field have been lacking for several weeks.

North Buckeye

Two natural producers were added to the North Buckeye (Wicklund) pool by the Sun Oil Co. prolific Rabb lease. They were Sun's No. 10 Rabb, NE SW NE section 10-18n-1w, which rated 150 bbls. daily natural flow, and the same company's No. 12 Rabb, NE SE NW section 10, which gauged 300 bbls. natural production. Five natural producers in both north and south fields combined for a total of 1,000 bbls. initial production. Cryden & Rowmor's No. 2 Shaffer, NW SE SW section 12, which was rated a 75 bbl. natural producer a week ago, was being prepared for acid.

South Buckeye

Top honors of the week for Buckeye production went to S. & S. Oil Co. No. 2 Fritzwater, NW SE NE, section 26-18n-1w, which flowed 400 bbls. naturally, in 24 hours. The same company No. 1 Fritzwater, a southern offset, was reported at 200 bbls. after an acid treatment. Gordon Oil Co. brought in a well on two of its state leases the past week. They were the No. D-2 State, NE NE NW section 35-18n-1w, which gauged 150 bbls. natural flow and the No. D-3 State, NW NE NW section 35, a 100 bbl. natural producer. Bell & Marks' No. 3 Arkwright, NW SW NE section 35-18n-1w, was acidized and increased from 75 bbl. to 150 bbl. per day.

Gladwin—Secord

As expected after last week's showing Archie M. Henry's No. A-1 State, SW NE NW section 12-19n-1e, is to be plugged and abandoned. It is the first dry hole in the Secord area. Four other tests in nearby sections are in various stages of drilling.

Arenac—Adams

What appeared to be a highly favorable Traverse well developing the past week was E. Harvey Linabury's No. 2 McTaggart, NE NE SE section 26-19n-3e, which was reported with 2,000 feet of oil in the hole and the well being tubed for acid treatment.

Allegan—Salem

Two producers and a dry hole made up Allegan County's record of the week in the Salem field. Regal

(Continued on Page 88)

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Central West

By STAFF CORRESPONDENT

ILLINOIS COMPLETIONS MADE SMALL AVERAGE PRODUCTION

MATTOON, Ill., Jan. 10.—The Carter Oil Co., which last week opened a pool in Fayette County, appears to have opened another in Jefferson County. Neither of the discovery wells are large in crude output but they are in the Benoist and Bethel sands, respectively, which are among the shallow pays in the basin, otherwise the past week brought disappointing results. There were no large producers among the nine completed oil wells. Three tests were dry and a number of wells were shut down at depths that made their fate look dubious. Fourteen new operations were announced or two more than the number completed.

The Shell Petroleum Corp. has a 150-bbl. pumper in No. 1 Criley, SW SE SE section 2-1n-1w, Clinton County. It produces from Benoist sand at 1,353-78 feet. The well pumped 1,020 bbls. in 6 days and 20 hours.

Santa Fe Oil Co. No. 4 Vandello, NE NW NE section 8-1n-3w, Clinton County, started at 40 bbls. a day on the pump from sand at 1,001-17 feet, total depth.

In Jefferson County, Carter Oil Co. No. 1 Tate, C W half NW NE section 10-1s-2e, which had been drilled to 3,874 feet, or 234 feet below the top of the Devonian, and plugged back to 1,990 feet, tested Bethel sand at 1,980-90 feet and when put on the pump it made 70 bbls. of oil and 30 bbls. of water in 24 hours and settled to 42 bbls. of oil and 22 bbls. of water on the second day. On the third day it pumped 41 bbls. of oil and 21 bbls. of water.

In Richland County, W. B. Frost No. 1 Farris, SW SW SE section 18-3n-10e, found the pay at intervals from 3,052 to 3,078 feet. After a 1,000-gallon acid treatment it pumped 215 bbls. of oil the first 24 hours, but settled to 84 bbls. a day. There was no water.

In Wayne County, Pure Oil Co. No. 2 S. S. Gill, SE SE NW section 27-2n-8e, found Fredonia lime at 3,049 feet and pay at intervals from 3,052 to 3,078 feet. It swabbed 41 bbls. in 10 hours but after a 3,000-gallon acid treatment swabbed and flowed 408 bbls. of oil in 24 hours. When put on the pump it produced 150 bbls. in 24 hours. Total depth is 3,088 feet.

In Clay County, Wiser Oil Co. No. 11 D. Smith, NE SW NE section 28-3n-8e, total depth 3,013 feet, was plugged back to 2,930 feet and made an 11-bbl. pumper from dolomite at 2,900-06½ feet. The McClosky pay was absent.

In Wabash County, Deck & Hayes No. 1 Provident Mutual Insurance Co., C SE NW section 25-1s-13w, measuring from Indiana principal meridian, was abandoned at 2,636 feet. McClosky lime at 2,568-70 feet tested mud and salt water and a little oil.

Vermilion Oil Co. No. 1 Duff, NE SE NE section 19-3n-8e, Clay County, found the top of the Ste. Genevieve lime at 2,897 feet; Rosecliare at 2,895½ feet, and pay at 3,016-30 feet. It was acidized and made 124 bbls. of oil the first 24 hours on the pump.

Pure Oil Co. No. 1 McKinney, NW SW SW section 9-2n-8e, Clay County, started at 17 bbls. per day, pumping from pay at 3,023-26 feet.

Graham & Duncan No. 5 Land Bank, NE SW NE section 8-2n-8e, had pay intervals from 2,998 to 3,033 feet. It was acidized with 1,000 gallons and then with 3,000 gallons and pumped 150 bbls. of oil the first 24 hours.

In Jasper County, Denver Producing & Refining Co. No. 1 Ochs, NW NW NE section 33-6n-14w, was dry and abandoned at 3,018 feet. Ste. Genevieve lime was found at 2,654 feet, and there was a showing of oil at 2,689-2,703 feet.

In Jefferson County, Schossberg & Sigel No. 1 Schneider, NE cor. SE section 15-1s-1e, found water at 1,932-59 feet and was abandoned.

Carter, Porter and others abandoned the location for No. 1 Riggs, SE NE SW section 26-2n-8e, Wayne County. Julius Livingston abandoned the location for No. 2 McDowell, NE cor. SE SE SE section 8-3n-9e, and W. T. Lacey did likewise in the case of No. 2 Galloway in the same 10 acres. Con Evans and others location for No. 1 Morey, SE SE NW section 4-4n-1e, Marion County, was abandoned, and Pure Oil Co. No. 1 Clay City Banking Co., NW NW NW section 34-3n-8e, and No. 7 Weiler, NW NE SE section 33-3n-8e, both in Clay County, were abandoned locations.

Pure Oil Co. No. 1 Moseley, SW NE NE section 32-3n-8e, was shut down at 3,027 feet. Mammoth Producing & Refining Co. was shut down at 3,150 feet, with no showing in No. 2 Heitz, SE SW NW section 34-4n-9e, Richland County.

New Work

The following reports on new operations range all the way from locations to spudding. In Clinton County, Phelps and others No. 1 Gubser, 1,080 feet from north and 220 feet from west lines of NW quarter section 4-3n-2w, was spudded; Santa Fe Oil & Gas Co. No. 3 Robben, C E half SW SE section 5-1n-3w, location; Adams Oil & Gas Co. No. 2 Schmitz, C NE SE NE section 2-1n-1w, rigging up rotary; Holle & Willis No. 1 Hughes, C N half NE NW section 18-3n-2w, location.

In Clay County, Bonnie Oil & Gas Co. was moving in rotary for No. 1 Walker, SE SE NW section 21-4n-8e. Pure Oil Co. made a location for No. 4 Albert Travis, 1,160 feet from the east and 330 feet from the north line of NW quarter section 33-3n-8e, and was moving in material for No. 3 J. E. Bressenden, SE NW NE section 8-2n-8e.

In Jackson County, Stanolind Oil & Gas Co. was building derrick for No. 1 Lines, SE SE NW section 2-7s-4w.

In Richland County, Doctor Talieferro had cellar dug for No. 1 Everson, C NE NE SE section 23-3n-9e. The following are all Pure Oil Co. new operations: No. 1 Dora Hedrick, 995 feet from west and 80 feet from north lines of SE quarter section 17-3n-9e, cellar and pits; No. 4 Snyder, C E half SW NW section 3-3n-9e, location; No. 10 J. O. Coen, C W half NE NW section 9-3n-9e, location; No. 2 Montgomery, 1,204 feet from west and 378 feet from south lines of SE quarter section 8-3n-9e, building derrick.

In Effingham County, Kingwood Oil Co. and others No. 1 McWhorter, C E half SE NW section 15-6n-6e, is a derrick.

Important Drilling Wells

Carter Oil Co. No. 1 Clow, C W half SW NE section 15-8n-3e, which opened production from Benoist sand in Fayette County, was pumping 50 bbls. per day at 1,486-1,508 feet. It was not yet a completion.

Wiser Oil Co. and others No. 1 Irwin, C N half SE NW section 12-2n-7e, Clay County, was shut down for orders. Seven-inch casing was run to 3,040 feet. A drill stem test open 20 minutes, developed 120 feet of oil and 20 feet of sulfur water. Pay lies at 3,060-66 feet.

In Wayne County, the Texas Co. No. 1 Silverman, C E half SW NW section 16-3s-7e, had McClosky lime at 3,276-84½ feet. A drill stem test at 3,250-87 feet recovered 450 feet of oil and some mud. Bottomhole pressure was 350 pounds. Tubing was being run preparatory to a swabbing test.

In Franklin County, Robert E. Markham No. 1 Whittington, SW SE SE section 18-5s-3e, had Cypress sand at 2,478 feet, and saturated sands at 2,485-97 feet and 2,502-15 feet. A 60-minute drill-stem test recovered 540 feet of salt water and mud, and a trace of oil. Drilling was continued.

In Richland County, Bur-Kan Oil Co. and others test, No. 1 Allen, C SW NW section 27-4n-10e, was drilling at 2,600 feet. Gordon and others No. 1 Lothridge, CEL NE SW SE section 14-3n-8e, was drilled to 2,923 feet, and shut down for orders. Cypress was topped at 2,607 feet and Aux Vasse at 2,898 feet.

In Marion County, the Marion Oil Co. No. 1 Wilson, NE NE SE section 18-3n-3e, was drilling at 1,315 feet with the hole full of water.

In Jefferson County, Benedum-Trees, Inc., No. 1 Owens, NW SE SW section 23-4s-3e, had Benoist sand at 2,765 feet and was coring at 2,878 feet.

In Jasper County, Hoffman and others No. 1 King, SW NW NW section 20-8n-10e, corrected location, was shut down at 3,050 feet, awaiting a heavy rotary outfit with which to drill a deep test. It had McClosky lime top at 2,562 feet and Salem lime top at 2,950 feet.

In Effingham County, S. Halles and others No. 1 Haarman, NW SE SW section 32-8n-6e, was drilling at 2,461 feet.

In Clinton County, Shell Petroleum Corp. was drilling at 907 feet in No. 2 Criley, NW SE NE section 2-1n-1w.

In Bond County, Universal Oil Co. and DeMayo test in NW NE SW section 24-6n-4w, was shut down at 2,045 feet. Devonian was topped at 1,970 feet.

WESTERN KENTUCKY

OWENSBORO, Ky., Jan. 10.—An interesting wildcat is to be drilled in Muhlenberg County by the South-Penn Oil Co. The company has surveyed the location for this well and is now checking titles. It is expected to move on location some time this month.

The well will be drilled 1 mile north of Paradise and 3 miles south of Rockport. It is within one-half mile of an old well drilled by the Ohio Oil Co. that made 10 bbls. a day, natural flow, and which was not saved, because of deeper drilling.

Six oil wells were completed in the past week. These and one gas well and five dry holes brought the total completions to 12. Following is the record of completions and new work first reported in the past week:

Breckinridge County

Cloverport district: Galey, Fletcher and others No. 3 Cloverport Title Co., spudding.

Daviess County

Haynes district: Rex-Pyramid Oil Co. No. 5 Rollie Cooper, 1,108,000 feet of gas, 205 pounds rock pressure; Jones sand at 609-20 feet.

Hancock County

Indian Lake district: Galey & Fletcher No. 1 J. W. Holder, deep test was a dry hole, total depth 1,908 feet. It was drilled 101 feet in Corniferous.

Cloverport district: Galey & Fletcher No. 1 William West was a dry hole, total depth 550 feet. It was drilled 200 feet in Mississippi lime.

Patesville district: Ray Cooper and others No. 1 Ebbie Boling produced 5 bbls. from Jett sand.

Easton district: W. E. Hupp No. 2 R. C. Fuqua produced 10 bbls. from Jackson sand.

Henderson County

Niagara district: Meca Oil Co. No. 23 C. M. Gish produced 50 bbls. from Niagara sand at 697½-717½ feet, total depth was 724½ feet. It was shot with 90 quarts. Clark & Snyder No. 4 W. C. Cooper was moving in.

Ohio County

Friendship Church district: Moss Oil Co. No. 3 D. S. Smith produced 8 bbls. from Barlow sand at 606-17 feet, total depth 620½ feet; it was shot with

50 quarts. Cane Run Petroleum Co. No. 19 C. J. Rhodes produced 20 bbls. from Barlow sand. A. Teller No. 11 A. A. Whitehouse was moving in.

Adaburg district: Nollem Oil & Gas Co. No. 2 Vincent Crowe was moving in. Lang & Lewis No. 3 J. R. Cameron produced 10 bbls. from Barlow sand at 910-26 feet. It was shot with 60 quarts. The casing was shot out and well may be lost.

Narrows district: Nollem Oil & Gas Co. No. 3 Marshall Lloyd was a dry hole. Jackson sand was found at 612-25 feet, Barlow sand at 640-55 feet, total depth 655 feet.

McLean County

Island district: South-Penn Oil Co. No. 2 Alma Nall was rigging up. Hume, Steele & Early No. 1 G. S. Ward was a dry hole at a total depth of 2,215 feet.

Mulhenberg County

Paradise district: South-Penn Oil Co. No. 2 Rogers-Crescent lease was a location.

Union County

Boxville district: H. Z. Clark and others No. 1 Waller Young was a dry hole. Niagara sand was found at 1,160-1,210 feet; total depth 1,210 feet.

Webster County

Sebree dsitrict: Kentucky Natural Gas Co. No. 1 Fred Watson was moving in. I. B. Browning and others No. 6 J. R. Ramsey deep test was shut down at 300 feet.

EASTERN KENTUCKY

ASHLAND, Ky., Jan. 10.—Two completions and one dry hole are included in the report of field operations in Eastern Kentucky.

In Powell County, Coleman Hall drilled a dry hole in No. 4 on the George A. Rogers land, at Pilet, in the South Fork district of the county. The South Penn Oil Co. is down 200 feet in No. 7 Wm. Adams Jr. farm on South Fork, and reports the completion of No. 2 on the Matt Lowry land at Mt. Springs a 3 bbl. well.

In Knott County, Inland Gas Corp. completed No. 195 on Whitaker & Waddell land at total depth of 3570 feet, in white slate, but no data regarding the open flow has yet been reported.

In Pike County, Inland Gas Corp. is rigging up No. 1 on Helen Leslie farm on Levisa Fork.

In Floyd County, Inland Gas Corp. was drilling at 1,132 feet, in Salt sand in No. 197 on the J. C. Hopkins land on Stratton Branch of Levisa Fork, Kentucky-West Virginia Gas Co. is down 995 feet, in slate and shells in No. 563 on the H. H. Smith land near the Mouth Camp Branch of Levisa Fork. The same firm had reached 1,135 feet, in slate, in No. 564 on the Jennie Caldwell land. Kentucky West Virginia Gas Co. was drilling 715 feet, in slate, No. 565 on the J. I. Stepp land nearby. The same company is down 1,105 feet, in sand, in No. 566 on the Samuel Dillion land on Ivy Creek of Levisa Fork, and is idle at No. 567 on M. D. & M. Slone land, and is moving in at No. 5,233 on John F. Burchett land on Cow Creek.

In Martin County, Kentucky-West Virginia Gas Co. was drilling at 1,440 feet, in white lime, in No. 560 on the Melissa Ward land on Rock-House Fork of Rockcastle. The same firm is moving in at No. 5,232 on C. W. Preece land on Coldwater Fork and is rigging up No. 5,235 on the same land.

In Lee County, Thomas Witmer was drilling at 418 feet in No. 7 on the C. J. Tipton land on Billie's Fork in the Big Sinking district. Petroleum Exploration was down 512 feet in No. 1 on the J. C. Crabtree land on Little Sinking in the same district.

In Lawrence County, Kentucky Oil Producers, Inc. is spudding No. 2 on John Rose land on Keaton in the district of the same name.

OHIO

FINDLAY, Ohio, Jan. 10.—The outstanding completion of the week in central Ohio is the 7,000,000-foot gas well drilled by the Ohio Fuel Gas Co., No. 1 Albert I. Wolfe, in section 24, Butler Township, Knox County. The gas was found in the Clinton sand at 2,976-83 feet. Other completions are as follows:

In Knox County, Jefferson Township, East Ohio Gas Co. No. 1 Benjamin Kaylor, section 18, made 476,000 feet gas from the Berea at 745-52 feet.

In Athens County, Carthage Township, Ohio Fuel Gas Co. No. 2 Eva C. Chase, section 3, was dry and abandoned at 1,292 feet. In Carthage Township, Fairfield Gas Co. No. 4 J. L. Varner, Fraction 3, is good for 500,000 feet gas from Maxon sand at 1,114-79 feet and Keener at 1,220-42 feet In Rome Township, B. Johnston No. 3 Anna L. Snow, Fraction 34, made 185,000 feet gas from the Maxon at 895-945 feet.

In Licking County, Perry Township, Armbruster & Stricker No. 1 Bucy & Stricker, SE quarter section 6, was dry in the Berea at 671-85 feet.

In Medina County, Chatham Township, John Marsh No. 15 Ira Stratton, Lot 2, Tract 18, found the Berea dry at 465-512 feet. In Chatham Township, Edson & Son No. 39 L. R. Wideman, Lot 54, made 8 bbls. oil the first 24 hours from Berea at 460-530 feet. In Chatham Township, Edson & Son No. 38 Ripley, Lot 1, Tract 13, made 4 bbls. of oil from Berea at 403-60 feet. In Chatham Township, Edson & Son No. 21 Ray Packard, Lot 3, produced 2 bbls. of oil from Berea at 350-87 feet. In Chatham Township, Edson & Son No. 35 Helen Bricker, Lot 4, Tract 15, started at 4 bbls. of oil from the Berea at 352-89 feet.

In Monroe County, Wayne Township, L. E. Smith No. 9 L. E. Smith, NE quarter section 26, was dry in the Lime sand at 1,222-40 feet.

In Morgan County, Marion Township, C. P. Bowman No. 3 Charles C. Woodyard, Lot 24, made 80,000 feet of gas from the Second Berea at 1,535-53 feet.

In Muskingum County, Blue Rock Township, Preston Oil Co. No. 1 George Lilienthal, section 5, was dry in Clinton sand, but made 4 bbls. of oil from the Medina at 4,163-43 feet.

In Noble County, Beaver Township, Barnesville Development Co. No. 1 J. O. Gibson, section 12, made 25,000 feet of gas from Berea at 1,650-59 feet.

In Stark County, Osnaburg Township, Dewalt & Louden No. 2 Charles C. Weiroeugh, section 7, is good for a small gas well in the Berea at 766-98 feet. In Perry Township, East Ohio Gas Co. No. 1 Bessie Kimbark, SE quarter section 2, made 149,000 feet gas from the Clinton sand at 4,372-92 feet.

In Washington County, Liberty Township, Metcalf and others No. 2 Grover Hendershot, SW quarter section 22, is good for 2 bbls. oil and 134,000 feet gas from the Keener from 1,195-1,210 feet. In Newport Township, Schneider Oil Co. No. 12 John Haynes, NE quarter section 27, was dry and abandoned at 1,100 feet.

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West and North Texas

By MITCHELL TUCKER

TWO-MILE EXTENSION TO THE SLAUGHTER, HOCKLEY, FIELD

FORT WORTH, Tex., Jan. 10.—The northern sector of the Permian Basin received renewed interest last week, as the Texas Co. completed the third and best producer in the Slaughter field of southwestern Hockley County, and extended the probable productive limits over 2 miles to the northwest. Three new locations were made at outpost points immediately.

The Texas Co. No. 2 Bob Slaughter, southeast corner of Labour 92, League 37, Zavalla County School Land, flowed 531.90 bbls. of oil in 24 hours after acidizing with 2,000 gallons, from Permian lime pay topped at 4,890 feet and bottomed at 5,985 feet. Its initial production was about 50 bbls. higher than Texas Co.'s discovery well early in 1937, and 100 bbls. more than Stanolind No. 1 Slaughter, 1¼ miles southeast. Gulf Oil Corp. immediately staked a southeast diagonal offset across the line into Terry County, and another wildcat in the area about 3 miles due west of the discovery well. Sid W. Richardson is building derrick for the immediate drilling of a 2-mile outpost test of the Hockley field to the north.

Justification for the continued interest in the northern Permian Basin was also given in several other completions during the week. About 4 miles northwest of the Duggan pool of Cochran County, P. N. Wiggins and others No. 1 Carrie Slaughter Dean, is drilling in the Permian saturation, and flowed and swabbed 245 bbls. of oil in seven hours after being shut down a short while at 5,030 feet. Deepening continues for a thorough test of the section.

In extreme northwestern Yoakum County, a wildcat being drilled by Stogner & Pipkin showed producing possibilities. No. 1 Brock Estate, section 103, Block D, J. H. Gibson Survey, cored saturation and porous lime at intervals from 5,204 to 5,266 feet. Preparations are being made to acidize and test.

Ordovician Search

Showings of oil saturation in cores taken from Magnolia Petroleum Co. No. 1-A McKee, northern Pecos County wildcat test of Ordovician possibilities, renewed interest in the lower basin area. A 9-foot saturated sand section has been cored from 5,271 to 5,280 feet, after finding the first sand break in the Simpson body just above this point. A 20-foot core was taken from 5,274 feet to the present total depth of 5,294 feet. A recovery of about 18 feet was made, in which the top 6 feet were solid sand with some varying degree of porosity and saturated. Oil bled from the core slowly, and indicated to be of very high gravity. The lower portion of the cores were hard, dry sand and shales. Some geologists are prone to correlate this saturated section with the Simpson pay from which Gulf's Ordovician producers in the Sand Hills field of Crane County are making their prolific yields. A Schlumberger electrical survey was made of the hole late in the week, and it is being reamed to a 12¼-inch size from 4,900 feet to 5,221 feet, where shoulder will be provided for setting of 9⅝-inch casing. Thorough production tests will be made after casing has been set and cemented.

In western Crane County Gulf Oil Corp. No. 3 McKnight, 3 miles from production in this level at Sand Hills pool, topped the Ellenberger about 400 feet high and showed a marked thinning of the Simpson. Only 88 feet of Simpson was drilled, going into the Ellenberger at 6,164 feet. The 7-inch casing was cemented at about 6,050 feet to test very slight showings indicated on the drill stem test. The cement plug is now being drilled.

In extreme northwestern Pecos County, 7 miles northwest of Gulf No. 3 McKnight, H. F. Wilcox Oil & Gas Co. No. 1 McKnight is shut down for orders at 7,200 feet. This well had the Ordovician series as its objective, but failed to go out of the Permian at its present total depth.

Among other tests seeking Ordovician production, Tex-Tor No. 1 Judkins and Spencer in Schleicher County, has drilled to 5,440 feet, and John M. Cooper No. 2 Page to 5,004 feet, in the same county, without encountering the desired marker. In Crockett County, Moore Brothers No. 1 Paul Perner is at a depth of 8,714 feet in lime without showings. Amon G. Carter and others No. 1 Frank Sweeten is drilling at 5,259 feet in lime and shale, Edwards County. Floyd C. Dodson No. 1-A Texas American Syndicate in Brewster County is drilling at 6,589 feet.

WEST CENTRAL TEXAS

Avoca Field

Five-inch casing is to be run in Avoca's possible 5-mile extension well for a thorough test of its producing possibilities. Owens-Snebold Oil Corp. No. 1 Haterius, thought to be an extension from the deep Palo Pinto production being made in the Avoca field of northwestern Jones County, was deepened from 3,215 to 3,218 feet last week, and on production tests made about 300 bbls. of oil and 22 bbls. of water daily. The 6-inch casing has formerly been cemented at 3,192 feet, and it is thought water is coming from above casing seat through an imperfect cementing job, so the 5-inch is being run and cemented in an effort to complete the well as a producer free from water.

Iron Mountain Oil Co. is preparing for an east offset to this important extension well, on its No. 1 Beck property, located in the NW cor. of section 162, B.B.B.&C. Survey.

Rotan Field

A 10-acre spacing pattern has been ordered for the new Rotan field in Fisher County by the Texas Railroad Commission. Allocation for the pool has been placed half on acreage and half on potential, with a 20-acre maximum proration unit. Potential tests were ordered made by January 15.

Grisham-Hunter Oil Corp. No. 1 E. D. Appling, northwestern Jones County wildcat, which showed as a possible field opener from sand logged at 2,640-53 feet several weeks ago, is underreaming 8-inch casing to shut off a water sand at 2,975 feet. Operators are drilling the well down to its contract depth of 4,000 feet for a test of the Palo Pinto before attempting to complete it in the upper level. The well is in the SW quarter of section 32-1, B.B.B.&C. Survey.

A north Comanche County wildcat, W. J. Dobbs No. 1 Hodges, indicates itself a possible new producing area after logging oil and gas showings from 2,630-65 feet and from 2,700-10 feet. At the present total depth of 2,710 feet, hole is being underreamed in preparation to set 7-inch casing.

TEXAS PANHANDLE

Since the opening of 1938, 24 new locations have been staked in the Panhandle district. Hutchinson County led with 10, Gray County had 6, Carson and Wheeler counties 3 each, and 1 in Moore County.

Cottle County

F. P. Hynds and others No. 1 Lee, in the A.B.&M. Survey, a wildcat test 5 miles southwest of Paducah in Cottle County, has been plugged and abandoned at a total depth of 5,468 feet. Although this well originally had only a contract depth of 5,000 feet, it was deepened to its present depth of 5,468 feet when a marked crevice was noted in the formation and drilling was stopped.

Note: The review of the North Texas district will be found on Page 76.

CENTRAL TEXAS COMPLETIONS

Brown County

Ungren & Frazier and Paul Pitzer No. 1 Cox & McGinnis, total depth 2,675 feet, dry and abandoned.

S. B. Roberts No. 1 Angel, Ranger lime 2,755-82 feet, 1,500,000 feet gas. Guyle Greynolds No. 4 A. Leatherwood, 1,130-40 feet, total depth 1,140 feet, 5 bbls. per day.

Callahan County

Walker & Webb No. 1 J. E. Ross, total depth 3,001 feet, dry and abandoned.

Coleman County

McDonald, Campbell & Cunningham No. 1 R. M. Lowe, total depth 1,436 feet, dry and abandoned.

Erath County

Arnold No. 1 McMillan, total depth 3,207 feet, dry and abandoned.

Fisher County

General Crude Oil Co. No. 1 Pearl Denton Casey, temporarily abandoned. Magnolia Petroleum Co. No. 2 Ella Smith, total depth 3,885 feet, plugged back to 3,508 feet, sand 3,489-3,507 feet, initial production 231 bbls. Sunray Oil Co. No. 4 Robinson, lime 3,548-50 feet, total depth 3,550 feet, initial production 772 bbls.

Jones County

Humble Oil & Refining Co. No. 1 J. W. Hollums, lime 3,214-24 feet, initial production 1,100 bbls. Petroleum Producers No. 1 Milsap, sand 1,927-44 feet, total depth 1,958 feet, shot with 40 quarts, initial production 384 bbls. C. E. Waite, trustee, No. 1 B. T. Ray, total depth 3,510 feet, dry and abandoned.

Campbell No. 1 Lee, total depth 2,250 feet, dry and abandoned. A. P. Kouri No. 1 J. C. Fielder, total depth 2,356 feet, dry and abandoned.

Shackelford County

Chartier Oil & Gas Co. No. 1-174 Dawson & Conway, total depth 1,544 feet, dry and abandoned.

Taylor County

Dale H. Dorn No. 1 Hopkins, total depth 3,660 feet, dry and abandoned. Golden Petroleum Co. No. 1 Christian Braune, temporarily abandoned, 2,668 feet.

WEST TEXAS COMPLETIONS

Andrews County

Fuhrman Petroleum Co. No. 6 Ford, 4,235-4,465 feet, flowed 3,165 bbls. per day. Humble Oil & Refining Co. No. 33 J. S. Means, 4,500-31 feet, 192 bbls. per day; No. 34 Means, 4,500-38 feet, 258 bbls. per day.

Crane County

Gulf Oil Corp. No. 166 McElroy, 2,731-2,947 feet, 1,536 bbls. per day. Texas Co. No. 2-D University, 3,505-60 feet, 4,771 bbls. per day, naturally.

Crockett County

J. N. Simpson No. 1 Hoover, 2,037-67 feet, pumped 51 bbls. per day.

Ector County

Cities Service Oil Co. No. 4-C Cummings, 4,160-4,257 feet, 411 bbls. per day. W. H. Dunning, Jr., No. 3 Scharbauer, 4,150-4,222 feet, flowed 86 bbls. per day. E. E. Ferguson No. 5-B University, 3,340-3,655 feet, 507 bbls. per day. Gulf Oil Corp. No. 56 Goldsmith, 4,165-4,280 feet, 470 bbls. per day. Humble Oil & Refining Co. No. 4-B Cowden, 4,156-4,202 feet, 822 bbls. per day; No. 6-C Scharbauer, 4,146-95 feet, 364 bbls. per day. Landreth Oil Corp. No. 8-E Scharbauer, 4,160-4,215 feet, 1,468 bbls. per day. Ohio Oil Co. No. 2 Wright, 4,105-4,240 feet, 629 bbls. per day. Phillips-Pure No. 16 Cowden, 4,100-68 feet, 596 bbls. per day. Stanolind Oil

& Gas Co. No. 66 Cowden, 4,140-4,380 feet, 312 bbls. per day. Texas Pacific Coal & Oil Co. No. 15 Scharbauer, 4,155-4,244 feet, 183 bbls. per day.

Fisher County

Snowden & McSweeney No. 1 Morrow, 3,525-37 feet, 320 bbls. per day in the Rotan field. Sunray Oil Co. No. 8 Robinson, 3,520-30 feet, 598 bbls. per day.

Gaines County

In the Wasson field, Carter-Continental Oil Co. No. 2 Wasson, 4,840-4,985 feet, 543 bbls. per day.

Hockley County

Texas Co. No. 2 Slaughter, 4,895-4,985 feet, flowed 532 bbls. per day through seven-eighths inch tubing choke.

Howard County

Magnolia Petroleum Co. No. 22 Roberts, 2,423-2,565 feet, 1,099 bbls. per day. Merrick & Bristow No. 13 Hooks, 3,120-3,263 feet, 1,255 bbls. per day. Plymouth Oil Co. No. 14 Klah, 2,478-2,539 feet, 1,500 bbls. per day. Shasta Oil Co. No. 1-B Texas Land & Mortgage Co., 2,708-2,850 feet, 1,483 bbls. per day.

Pecos County

Arkansas Fuel Oil Co. No. 2-A University, 1,633-46 feet, 141 bbls. per day. W. K. Tuller No. 2 Perry, total depth 2,004 feet, dry and abandoned.

Upton County

Gulf Oil Corp. No. 10 Rogers, 2,209-2,241 feet, 496 bbls. per day.

Ward County

Humble Oil & Refining Co. No. 20-F University, 2,571-2,751 feet, 980 bbls. per day. Standard Oil Co. of Texas No. 19-37 McFarland, 2,424-2,658 feet, 192 bbls. per day. Turman Oil Co. No. 9 Llano-Sloan, 2,950-3,030 feet, 107 bbls. per day.

Winkler County

Emperor Oil Co.-Iverson No. 2 Halley, 2,740-2,904 feet, 1,025 bbls. per day. Emperor Oil Co. No. 6 Hess, 3,045-67 feet, 1,958 bbls. per day. Humble Oil & Refining Co. No. 24-A Colby, 2,786-3,115 feet, 384 bbls. per day. Texas Pacific Coal & Oil Co. No. 5 Duval, 2,810-3,080 feet, 1,120 bbls. per day.

Yoakum County

J. W. Murcheson No. 1 Sawyer, dry and abandoned, total depth 5,255 feet. Shell Petroleum Corp. No. 1-A Baugart, 4,875-5,000 feet, 466 bbls. per day; No. 1 Bennett, 5,105-5,259 feet, 429 bbls. per day.

PANHANDLE COMPLETIONS

Gray County

Cities Service Co. No. 2 Heitholt, 3,168-3,274 feet, 617 bbls. per day. Hagy, Harrington & Marsh No. 1 Bell, 2,565-2,710 feet, 8,000,000 feet. I. T. I. O. No. 12 Smith, 3,165-3,255 feet, 955 bbls. per day. Kewanee Oil & Gas Co. No. 13 Arnold, 3,160-3,275 feet, 459 bbls. per day; No. 14 Arnold, 3,180-3,262 feet, 594 bbls. per day; No. 7 Adams-Morse A, 2,470-2,562 feet, 378 bbls. per day; No. 6 Morse C, 2,518-2,622 feet, 393 bbls. per day. Gulf Oil Corp. No. 11 Barrett, 3,235-98 feet, 445 bbls. per day. Pringle Oil Co. No. 7 Jackson, 3,180-3,252 feet, 348 bbls. per day. Southern Petroleum Exploration Co. No. 10 Vaughn, 3,126-3,224 feet, 744 bbls. per day. Texwell Oil Corp. No. 1 Vaniman, 2,795-2,920 feet, 10,627,000 feet gas.

Hutchinson County

J. E. Crosbie, Inc. No. 21 Pitts, 2,925-70 feet, 819 bbls. per day. Martex Oil Co. No. 5 Pitcher A, 3,110-65 feet, 552 bbls. per day. McIlroy Oil Co. No. 1 Tomlinson, 3,120-85 feet, 385 bbls. per day. Phillips Petroleum Co. No. 31 Cockrell Ranch, 2,935-73 feet, 356 bbls. per day. Seaboard Oil Co. No. 3 Whittenburg, 2,670-2,717 feet, 359 bbls. per day. The Texas Co. No. 15 Lewis, 2,980-3,060 feet, 587 bbls. per day.

Wheeler County

Elbar Oil Corp. No. 2 J. J. Perkins, 2,295-2,325 feet, 110 bbls. per day.

California Fields

(Continued from Page 71)

Co. has concluded drilling operations on No. 2 C. L., in section 12-28-28, at 2,031 feet and after running in 58 feet of 6⅝-inch liner including 31 feet of 100-mesh screen started rigging up pumping equipment. Dwight Vedder has also concluded drilling operations on a new well and this potential producer, No. 4 Bell, should be tanking oil within the next few days.

Kern County

In the Midway-Sunset field of Kern County where drilling operations have been declining for the past several weeks Hallmark Oil Co. completed No. 9, in section 25-12-24 pumping 77 bbls. of unusually clean 22.8 gravity oil per day from 2,701 feet. Victor Oil Co. well No. 14 in section 35-32-23; Texas Co. No. 30 in section 32-32-24, and Merrit-Annex Oil Co. No. 7 Fried in section 25-12-24, should be the next wells completed in the Midway-Sunset field as they are all rotating ahead on top of the pay. In the Kern River field, Standard Oil Co. has completed No. 27-15 in section 15-28-27, pumping 79 bbls. of 12.3 gravity oil cutting 7 per cent daily from 2,230 feet. In the Premier section of the Mount Poso field, Pebble Beach Oil Co. completed No. 6 Newhope pumping 98 bbls. of 13.5 gravity oil cutting 13 per cent daily from 2,653 feet. It was finished with 108 feet of 4¾-inch liner including 88 feet of 120-mesh landed on bottom. This well failed to clean up and show sustained production and the crew is engaged in a clean-out job.

Los Angeles Basin

In the Huntington Beach field, Lido Petroleum Co. recompleted No. 2 Severns, pumping 540 bbls. of clean 25.3 gravity oil per day from 5,042 feet. This well was originally an upper zone producer but after being taken over by Lido Petroleum Co. the upper part of the hole was junked and the lower part whipstocked out beneath the Huntington Beach tidelands.

In the Dominguez field, Union Oil Co. completed No. 56 Callender, flowing 280 bbls. of clean 30.8 gravity oil per day from 7,300 feet after the hole had been carried down to 9,620 feet as a deep test and subsequently plugged back to the completion depth. Union Oil Co. is still working on No. 100 Bell, a deep test in the Santa Fe Springs field at 11,314 feet. The well is capable of making about 300 bbls. per day while swabbing but thus far will not flow. Unless it makes a better showing the projected deepening campaign will be retarded.

In the Richfield district, Union Oil Co. No. 29 Chapman is nearing the 10,000-foot level but has not yet logged anything justifying a production test.

Union No. 35 Howard Park, a deep test in the Rosecrans field of Los Angeles Basin at 9,930 feet, is also nearing the 10,000-foot level but like No. 29 Chapman has not yet logged anything out of the ordinary.

Louisiana-Arkansas Fields

(Continued from Page 68)

650 pounds. Casing was at 6,141 feet and total depth 6,168 feet.

Caddo Parish

Five small producers were completed in the Caddo and Dixie fields of Caddo Parish. In Dixie, the D.C.R. Oil Co. No. 2 Sibley, section 15-19-14, made 10 bbls. per day on pump at total depth of 2,494 feet, and the Trippett and D.C.R. Oil Co. No. 5 School Board, section 16-19-14, made 40 bbls. per day pumping from a total depth of 2,460 feet. The latter operators' No. 6 School Board was abandoned as dry at 2,734 feet.

In the Caddo field, Gulf Oil Corp. No. 6 Curtis, section 19-20-15, started at 5 bbls. per day on the pump at 2,235 feet. R. E. Kennedy No. 1 Wells, section 10-21-15, is making 30 bbls. per day with 10 per cent salt water, on the pump, at 1,730 feet. Patterson & O'Marr No. 1 Player, section 26-21-15, was completed for 5 bbls. a day at 1,604 feet.

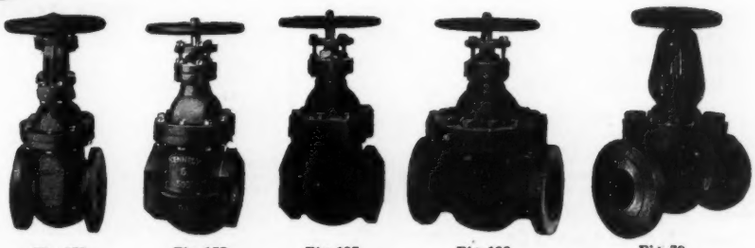
Claiborne Parish

In the Lisbon field of Claiborne and Lincoln parishes activity, spurred somewhat by the increase in purchases by pipe lines, and the promise of a third outlet, is showing some gains.

T. L. James & Co. No. 1 Tanner, section 32-21-4, after acidizing, made 40 bbls. per hour on a half-inch choke with tubing pressure of 300 pounds. The casing was set 20 feet off bottom at 5,200 feet.

The same operators' No. 2 Tanner, east of No. 1 was completed for an initial gauge of 35 bbls. per hour on a half-inch choke with tubing pressure of 280 pounds and 5½-inch casing set at 5,221 feet. Total

Valves



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depth of the well is 5,252 feet. Both Tanner wells were acidized.

A. O. Olson No. 6-A Patton, section 3-21-4, started at 50 bbls. of oil per hour, after acidizing. Tubing pressure on the gauge made with half-inch choke was 150 pounds and total depth of the test is 5,141 feet.

G. H. Vaughn No. 2 King, section 30-21-4, made an initial of 50 bbls. per hour on half-inch choke at a total depth of 5,135 feet, and tubing pressure of 275 pounds. Five and one-half inch casing was set at 5,110 feet.

In the Lincoln Parish section of Lisbon, the Gulf Oil Corp. No. 2 Patton, NW cor. NW SE section 6-20-4, flowed 639 bbls. in 11 hours on a quarter-inch choke with tubing pressure of 50 pounds. Seven-inch casing was set at 5,251 feet and total depth is 5,291 feet.

Love Bros. No. 1 Patton Estate, section 6-20-4, was completed for 85 bbls. per hour on a half-inch choke and tubing pressure of 200 pounds. Casing was set at 5,287 feet, 22 feet off bottom. All of the completed wells in Lisbon were acidized, with from 3,000 to 5,000 gallons.

De Soto Parish

On the south edge of the Bull Bayou field in De Soto Parish, the Petroleum Heat & Power Co. No. 1 Kavanaugh, NE cor. NW SW section 7-11-11, was completed for a good producer, leading to considerable prospective activity in the immediate area. The well gauged 105 bbls. per day on a quarter-inch choke, with tubing pressure of 745 pounds and casing pressure of 930 pounds. Total depth in 5 feet of sand is 2,841 feet. The company has staked locations for five additional tests to be drilled in the area, two of them being in offset positions to the No. 1 Kavanaugh.

Estimated Daily Production

Estimated daily gross production all companies week ending January 7, 1938:

NORTH LOUISIANA

Bellevue	760
Caddo light	3,775
Caddo heavy	2,525
Converse	615
Cotton Valley heavy	300
Cotton Valley light	*3,990
De Soto and Red River	1,430
Elm Grove	400
Haynesville	3,030
Holly	105
Homer	2,450
Lisbon	11,790
Pleasant Hill	115
Rodessa	42,495
Sarepta-Carterville	305
Sligo	310
Sugar Creek	340
Urania	2,850
Zwolle	800
Total	78,385

SOUTH ARKANSAS

Buckner	360
Champagnolle	1,250
El Dorado	1,890
Lisbon	275
Miller County	210
Nevada	720
Rodessa	9,495
Schuler	7,150
Smackover light	1,965
Smackover heavy	16,145
Stephens	545
Troy	1,300
Urbana	1,225
Total	42,530

Texas side of Rodessa field 18,570 bbls. daily.

*3,520 bbls. is distillate.

Schuler, Arkansas

The Schuler field, most active spot in Arkansas at present, is paying off in the Jones sand with large producers. During the past week three such wells were brought in, and a number of additional tests staked.

E. M. Jones No. 4 Marine Oil Co., SE SW SE section 17-18-17, came in making 54 bbls. per hour on a half-inch choke with tubing pressure of 500 pounds and casing pressure of 1,150 pounds. The gauge was made with the well cleaning, and making 17 per cent drilling fluid. Seven-inch casing was set at 7,604 feet and total depth is 7,610 feet. The casing was perforated in the Jones sand at 7,526-68 feet.

The Lion Oil Refining Co. completed No. 1-A Justiss, NE NW NE section 19-18-17, for a daily production of 1,989 bbls. on a half-inch choke. The tubing pressure was 90 pounds and the casing pressure 850 pounds. Five-inch casing was set at 7,640 feet and total depth of the well is 7,647 feet. Lion Oil Refining Co. No. 1 Marine Oil Co., NE SE SW section 17-18-17, made an initial production of 1,780 bbls. per day together with 12 per cent salt water.

Mississippi's current attraction is the Sun Oil Co. No. 4 Talley in the Lamar area, which at latest reports was coring a white crystal sand formation topped at 7,807 feet. The test is deeper than any previous wildcat drilled in the area, and the new sand is getting considerable attention.

Michigan Fields

(Continued from Page 83)

Dutch Petroleum Co. No. 4 Hardy, NW SW SE section 16-4n-13w, acidized, increased to 600 bbls. daily production from a small natural producer, and Muskegon Oil Corp. No. 2 Heasley, SE SW NE section 21-4n-13w, was a 375-bbl. producer after acid. The dry test was Rose & Vale's No. 1 Bredewig, NW SW SW section 15-4n-13w, on which abandonment orders were issued.

Gladwin—Bentley

McClanahan Oil Co. No. 1 Connolly, NW NW SW section 35-17n-2e, which came in recently, has been placed on the pump, and is reported at 50 bbls. daily.

Crawford County

Further oil exploration in Beaver Creek Township Crawford County was in doubt this week as the latest effort to find a paying producer was ordered plugged and abandoned. It was Dome Oil Development Co. No. 1 Lindgren, NW SW SW section 33-25n-3w, which failed to find a show in the Dundee. No other tests were under way in Crawford as 1938 began.

Isabella County—Broomfield Township

Pure Oil Co. No. 10 Willie, NE NE NW section 4-14n-6w, which earlier last week flowed a head of 87 bbls. then filled with water, may be plugged back to pay level. The well appeared favorable for a time until the water menace appeared.

Ogemaw County—Churchill Township

H. C. Nelson's No. 1 Morris, SW SW NW section 31-22n-3e, was plugging back this week in an attempt to find a pay level after running into water. Weber Oil Co. No. 2 Fisher, SW SW NW section 35-22n-2e, was being completed this week after a favorable show of oil.

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Refinery Operations in Mid-Continent Slightly Reduced During January

By D. H. STORMONT

A further reduction in daily crude runs to stills is being made by Mid-Continent refiners this month, according to estimates supplied by individual refiners at the first of the month as to the volume of crude they will process during January. Following the substantial cut made in December this month's reduction, which amounted to 15,760 bbls., enabled refiners to start off the year with runs approximating 528,000 bbls., or slightly below those of January, 1937. And, in view of the speed with which stocks of gasoline are advancing such action is very timely.

According to A.P.I. figures total stocks of gasoline held by refining companies jumped 2,854,000 bbls. during the week ending January 1 and amounted to 77,291,000 bbls. Total stocks at that time in 1937 amounted to 62,661,000 bbls. In the Mid-Continent gasoline inventories on January 1 amounted to 9,821,000 bbls., following a 343,000-bbl. increase during the week, or some 1,685,000 bbls. higher than in 1937. Thus it is evident that unless crude runs are held at 1937 levels gasoline stocks may become alarmingly high before the motoring season sets in.

Greatest Drop in North Texas

All but two of the eight districts comprising the Mid-Continent shared in this month's decrease in runs. North Central Texas and Oklahoma with declines of 6,265 and 4,860 bbls., respectively, show the greatest drops with East Texas in third place. North Louisiana and the West Texas-Panhandle areas both show increases of a little over 1,000 bbls. each.

In Oklahoma the decrease in throughput was due largely to Johnson Oil Refining Co.'s Cleveland plant being closed down on the first of the month. The company, however, plans to reopen the plant about the middle of the month. Continental Oil Co.'s cutback in runs at its Ponca City plant served to lower daily runs by an additional 2,500 bbls. Total runs for Oklahoma were estimated at 136,370 bbls. daily for the month, the lowest at any time since the spring of 1936.

Substantial reductions in daily runs at Magnolia's Fort Worth plant and at Continental's Wichita Falls refinery accounted for the large part of the North Central Texas decrease. Denver Producing & Refining Co., formerly the Gainesville Refining Corp., is reducing runs at its Gainesville plant by 100 bbls. daily. Panhandle Refining Co., following the completion of a new Dubbs cracking unit at its Lueders plant, is boosting its throughput 150 bbls. at that plant and reducing runs by a like amount at its Wichita Falls refinery.

North Louisiana Runs High

In North Louisiana total runs were up 1,200 bbls. after last month's decline of 6,600 bbls. Rodessa Oil & Refining Co. has enlarged the capacity of its Cedar Grove plant to 12,000 bbls. and has increased runs by 2,000 bbls. Shoreline Oil Co.'s Lewis plant, closed by a labor strike for over a month, was not operating at the first of the month although the labor difficulty had been settled. East Texas Refining Co. is reducing its throughput at Sandra by 500 bbls. daily. Premier Oil & Refining Co.'s 3,000-bbl. skimming plant in the Cotton Valley field was expected to be placed in operation soon after February 1.

Kansas refiners during January will process approximately 132,000 bbls. daily in comparison with 135,000 bbls. daily in the previous month, and in the West Texas-Panhandle area runs are being increased from 72,970 bbls. to 74,390 bbls. The great majority of refiners in the latter area are holding their runs at the same level as in December, the increase for the district being due to 1,200-bbl. increases in throughput at Gulf Oil Corp.'s Sweetwater plant and at Shamrock Oil & Gas Corp.'s Sunray plant.

Mid-Continent Crude Runs

Average Daily (Barrels)

(Advance estimate compiled by The Oil and Gas Journal)

	1936	1937	1938
January	501,600	531,535	528,280
February	519,960	541,790	.....
March	478,760	533,875	.....
April	506,775	558,385	.....
May	513,510	572,855	.....
June	527,225	593,625	.....
July	539,370	605,640	.....
August	557,650	624,475	.....
September	553,215	625,485	.....
October	536,330	619,210	.....
November	548,015	592,170	.....
December	535,500	544,040	.....

Operations by Refinery Districts

Daily crude runs

	Jan.	Dec.	Decr.
Arkansas	27,250	28,800	1,550
East Texas	58,840	61,615	2,775
Kansas	134,600	135,150	550
N. Central Texas	34,010	40,275	6,265
North Louisiana	46,800	45,600	*1,200
Oklahoma	136,370	141,230	4,860
Southwest Texas	15,920	18,400	2,480
W. Texas Panhandle	74,490	72,970	*1,520
Total	528,280	544,040	15,760

*Increase.

ARKANSAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Berry Asphalt Co., Waterloo	2,000	900	800
Henry H. Cross, Smackover	6,000	4,000	4,100
Lion Oil Ref. Co., El Dorado	17,000	13,000	14,600
Macmillan Pet. Corp., Norphlet	2,500	2,000	2,000
Root Pet. Co., El Dorado	12,000	7,000	7,000
Stephens Ref. Co., Stephens	700	350	300
Total	40,200	27,250	28,800

EAST TEXAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Beacon Oil & Ref. Co., Henderson	4,500	(*)	(*)
Cascade Ref. Co., Reed Switch	3,000	1,900	2,500
Clay Ref. Co., Arp	3,500	3,000	3,200
Danciger Refs., Inc., Longview	10,000	4,000	4,000
East Texas Ref. Co., Longview	10,000	5,500	5,500
General American Ref. Co., Gladewater	4,000	(*)	(*)
Hurricane Pet. Corp., Overton	5,000	3,550	3,400
Hurricane Pet. Corp., Arp Ref., Arp	3,750	2,250	3,000
Lacy Ref. Co., Kilgore	3,000	2,100	2,315
Magnolia Pet. Co., Corsicana	5,000	3,780	4,500
Martin Ref. Co., Gladewater	3,000	2,060	2,120
McMurrey Pet. Corp., Tyler	10,000	2,500	2,480
Premier Oil Ref. of Texas, Willow Springs	4,500	2,800	2,700
Paluxy Asphalt Co., Talco	5,000	2,500	3,000
Sinclair Ref. Co., Camp Switch	6,000	2,000	2,000
Solvex Refs., Inc., Gladewater	4,500	3,000	3,000
Southport Pet. Co., Kilgore	5,000	3,000	3,000
Talco Asphalt & Ref. Co., Mt. Pleasant	7,000	5,000	5,000
Texas Co., The, Dallas	16,000	7,800	7,800
Tower Ref. Co., Overton	3,000	2,100	2,100
Total	116,750	58,840	61,615

*Shut down.

KANSAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Barnsdall Ref. Co., Wichita	6,000	4,000	4,000
Bay Pet. Co., McPherson	3,500	2,000	2,100
Chanute Ref. Co., Chanute	2,000	700	800
Chase Ref. Co., Chase	800	(*)	(*)
Derby Oil Co., Wichita	8,000	5,000	4,500
El Dorado Ref. Co., El Dorado	5,000	3,500	3,500
Falcon Ref. Co., Inc., Great Bend	1,000	500	500
Globe Oil & Ref. Co., McPherson	12,500	12,500	12,000
Kanotex Ref. Co., Arkansas City	12,000	4,500	5,000
Kreuger Ref. Co., Natoma	150	50	50
National Ref. Co., Coffeyville	8,000	4,600	4,600
Pet. Products Co., Chanute	800	600	700
Phillips Pet. Co., Kansas City	23,000	16,300	16,300
Shallow Water Ref. Co., Scott City	2,000	1,250	1,000
Shell Petroleum Corp., Arkansas City	20,000	16,000	17,000
Sinclair Ref. Co., Coffeyville	12,000	8,100	8,100
Sinclair Ref. Co., Argentine	11,000	7,000	7,000
Skelly Oil Co., El Dorado	23,000	21,000	21,000
Socony-Vacuum Oil Co., Inc., Augusta	20,000	17,500	18,000
Standard Oil Co. (Indiana), Neodesha	7,500	6,000	6,000
United Ref. Co., Russell	1,200	500	500
Vickers Pet. Co., Potwin	4,000	3,000	2,500
Total	183,450	134,600	135,150

*Shut down.

NORTH LOUISIANA

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Arkansas Fuel Oil Co., Bossier City	25,000	19,000	19,000
Atlas Pipe Line Co., Shreveport	12,500	9,300	9,600
Bayou State Oil Corp., Hosston	750	500	500
East Texas Ref. Co., Sandra	7,900	5,500	6,000
Griswold Refs., Inc., Shreveport	1,000	(*)	(*)
Rodessa Oil & Ref. Co., Cedar Grove	12,000	9,000	7,000
Shoreline Oil Co., Lewis	5,000	(*)	(*)
Stanolind Oil & Gas Co., Superior	5,000	3,500	3,500
Total	68,250	46,800	45,600

*Shut down.

NORTH CENTRAL TEXAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Av. dly. runs Dec.
Baird Ref. Co., Baird	1,500	1,200	1,300
Coleman Ref. Co., Coleman	750	300	300
Continental Oil Co., Wichita Falls	6,000	2,935	4,550
Exchange Pet. Corp., Albany	800	(*)	(*)
Falls Ref. Co., Wichita Falls	2,000	600	300
Denver Prod. & Ref. Co., Gainesville	2,500	1,000	1,100
Gratex Ref. & Fuel Oil Co., Graham	500	270	275
Gulf Oil Corp., Fort Worth	8,000	6,500	6,800
Hightower Oil & Ref. Corp., Brownwood	750	100	100
Jacksboro Ref. Co., Jacksboro	250	75	50
Kraco Ref. Co., Bryson	2,000	600	700
La Salle Pet. Co., Burkburnett	3,500	600	1,000
Magnolia Pet. Co., Fort Worth No. 1	12,000	1,470	5,650
Midway Ref. Co., Goldsboro	300	100	100
Norgold Ref. Co., West Olney	500	(*)	(*)
North Texas Ref. Co., Gainesville	600	300	300
Ohio Oil Co., Fort Worth	5,000	3,500	3,500
Olney Oil & Ref. Co., North Olney	3,000	1,000	1,000
Panhandle Ref. Co., Wichita Falls	4,200	2,400	2,250
Panhandle Ref. Co., Lueders	1,500	1,000	850
Sinclair Ref. Co., Fort Worth	5,000	2,800	2,800

Company and location—	Daily capacity	Av. dly. runs Jan.	Dec.
Southland Ref. Co., Olney	500	200	200
Taylor Ref. Co., Taylor	1,000	800	1,000
Taxman Ref. Co., Wichita Falls	3,250	(*)	(*)
Texas Pacific Coal & Oil Co., Caddo	1,000	600	600
Tucker Oil Co., Burkburnett	250	160	150
Tydal Ref. Co., Gainesville	1,850	1,500	1,400
Wagoner Ref. Co., Electra	6,000	4,000	4,000
Total	74,500	34,010	40,275

*Shut down.

OKLAHOMA

Company and location—	Daily capacity	Av. dly. runs Jan.	Dec.
Anderson-Prichard Ref. Corp., Cyril	6,500	6,000	6,000
Barnsdall Ref. Co., Barnsdall	6,000	3,000	3,500
Barnsdall Ref. Co., Okmulgee	10,000	(*)	(*)
Bell Oil & Gas Co., Grandfield	5,000	3,200	3,200
Black Gold Ref. Co., Oklahoma City	3,000	900	900
Champlin Ref. Co., Enid	16,000	7,000	7,000
Cities Service Oil Co., Okmulgee	4,000	2,970	2,100
Cities Service Oil Co., Ponca City	12,000	7,100	7,100
Continental Oil Co., Ponca City	30,000	12,600	15,150
Cushing Ref. & Gasoline Co., Blackwell	1,700	800	800
Cushing Ref. & Gasoline Co., Cushing	6,200	2,500	2,500
Cosco Oil Co., Wynnewood	2,500	2,000	1,500
Deep Rock Oil Corp., Cushing	10,000	9,000	9,000
Eason Oil Co., Enid	3,000	2,000	2,000
Globe Oil & Ref. Co., Blackwell	8,000	(*)	(*)
Johnson Oil Ref. Co., Cleveland	6,000	(*)	4,200
Knox Ref. Co., Covington	300	100	100
Mid-Continent Pet. Corp., West Tulsa	40,000	23,000	22,900
Ohio Oil Co., Bristow	5,000	2,800	2,800
Omar Ref. Co., Garber	4,000	2,000	2,000
Peppers Gasoline Co., Oklahoma City	500	400	400
Phillips Pet. Co., Okmulgee	6,500	4,700	4,700
Pure Oil Co., Muskogee	10,000	7,400	7,580
Pyramid Prod. & Ref. Corp., Oklahoma City	600	(*)	(*)
Rock Island Ref. Co., Beckett	6,500	5,000	5,000
Sinclair Ref. Co., Sand Springs	8,000	4,000	4,100
Sooner State Ref. Co., Oklahoma City	700	(*)	(*)
Sun Oil Co., Yale	5,000	2,000	1,800
Sunray Oil Co., Allen	6,500	2,900	2,900
Texas Co., West Tulsa	16,000	10,600	10,600
Tide Water Oil Co., Drumright	12,000	12,000	11,000
Triangle Prod. & Ref. Co., Oklahoma City	1,200	400	400
Wilcox Oil & Gas Co., Bristow	6,000	(*)	(*)
Total	258,400	136,370	141,230

*Shut down.

SOUTHWEST TEXAS

Company and location—	Daily capacity	Av. dly. runs Jan.	Dec.
Amsco Ref. Co., Mirando City	4,500	3,250	3,250
Carle Ref. Co., Inc., San Antonio	1,000	(*)	600
Humble Oil & Ref. Co., San Antonio	5,000	3,100	3,100
Ina Oil & Ref. Co., Hondo	400	(*)	(*)
Magnolia Pet. Co., Luling	8,000	3,570	5,100
Pettus Oil & Ref. Co., Pettus	1,000	800	800
Phoenix Ref. Co., San Antonio	1,200	700	700
Phoenix Ref. Co., Pettus	900	400	400
Pioneer Oil & Ref. Co., Somerset	2,000	700	850
Rado Ref. & Prod. Co., McAllen	800	500	700
Texas Co., San Antonio	3,000	2,500	2,500
White Wing Ref. Co., Sullivan City	1,000	400	400
Total	28,800	15,920	18,400

*Shut down.

WEST TEXAS AND PANHANDLE

Company and location—	Daily capacity	Av. dly. runs Jan.	Dec.
Aero Gas & Ref. Co., Fort Stockton	350	100	100
Coltex Ref. Co., Colorado	12,500	8,000	8,000
Concho Ref. Co., San Angelo	250	100	100
Cosden Oil Co., Big Spring	10,000	9,000	9,500
Danciger Refs., Inc., Pampa	6,500	5,000	5,000
Danube Oil Corp., Borger	400	200	200
Farmers Ref., The, Lubbock	500	200	200
Gulf Oil Corp., Sweetwater	7,000	6,800	5,480
Howard County Ref. Co., Big Spring	2,000	600	600
Moutray Oil Co., Hawley	1,400	1,000	1,000
Onyx Ref. Corp., Abilene	2,000	1,500	1,500
Panhandle Ref. Co., Kings Mill	2,500	1,700	1,700
Payward Ref. Co., Shamrock	1,000	600	500
Phillips Pet. Co., Borger	50,000	21,400	21,400
Shamrock Oil & Gas Corp., Sunray	3,000	2,500	1,300
Shamrock Oil & Gas Corp., Lefors	1,600	1,300	1,550
Stamford Ref. Co., Stamford	450	400	400
Standard Oil Co. of Texas, El Paso	14,000	7,300	7,500
Starlight Ref. Co., Ballinger	1,000	150	200
Texas Co., El Paso	2,000	1,300	1,300
Texas Co., Amarillo	6,000	3,000	3,000
West Texas Ref. Co., Pecos	1,000	900	900
Western Ref. Co., Fort Stockton	1,000	400	400
West Texas Oil & Ref. Co., Sweetwater	60	40	40
Wickett Pet. Co., Wickett	3,000	1,000	1,100
Total	128,260	74,390	72,970

Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario, Jan. 10.—Owing to heavy completion in Turner Valley and pressure of distress oil from Montana, which has lost its previous markets in Canada, the basic field price of Turner Valley crude has been cut from $1.48 to $1.26, effective January 5. Announcement of the cut was made by J. H. McLeod, president of Royalite Oil Co., and concurred in by British American Oil Co.

At the same time, the charge for pipe line gathering and delivery was reduced from 17 to 15 cents per barrel, and storage and loading charges reduced 5 cents per barrel, making the net price reduction to the producer 15 cents per barrel.

Mr. McLeod's statement points out recent developments in the Montana fields have been of a disturbing character, no new markets having been found to replace those formerly enjoyed on the Canadian prairies, with the probability conditions will get worse instead of better, owing to oversupply in both Wyoming and Montana.

Imperial Oil and the British American Oil Co. are now shipping 8,000 bbls. daily to refinery points east of Calgary. Imperial Oil has ordered larger pumping equipment to increase the present capacity of its pipe line from Turner Valley to Calgary by 3,000 bbls. a day.

Large Producer

On the west flank of South Turner Valley, Commoil No. 1, LSD 15, section 29-18-2w5, finished more than a month ago in the lime at 7,475 feet and which had been producing 1,304 bbls. a day, was treated with 7,000 gallons of acid. It blew in with a spectacular show, and is making close to 5,000 bbls. a day, some 2,000 bbls. more than the previous record producer. Settled potential production will probably exceed 4,000 bbls. a day.

Royal Crest Petroleums No. 1, LSD 9, section 32-18-2w5, with potential of 735 bbls. and 257 bbls. prorated production, was also acidized. Early tests indicate a large increase. In the same section, West Flank Oil Co. No. 3, LSD 8, finished in the lime at 6,870 feet, was cleared with gas lift. Natural production was unofficially reported 800 bbls. It has been acidized and is testing for potential.

In the southwestern end, Royal Canadian Oils No. 1, LSD 15, section 20-18-2w5, completed by Royalite Oil Co. at 7,416 feet in the lime, with natural production of 764 bbls. prorated at 267 bbls., was given acid treatment. On test is showed an increased potential of 931 bbls., prorated at 325 bbls. Immediately south, Sunset Oils No. 1, LSD 10, same section, finished in the lime at 7,475 feet, developed a natural flow between 1,300 and 1,400 bbls. It is being acidized.

The Commoil, Royal Canadian and Sunset wells are all west of the early crude producers and a considerable distance farther down the west flank of the structure, and their completion as large producers indicates possibilities of an exceptionally large field.

Tests in the Lime

In North Turner Valley, Royalite Oil Co. No. 29 (Turner Basin), LSD 7, section 27-20-3w5, got the Madison limestone at 6,275 feet and cemented 6⅝-inch casing at 6,299 feet. This is the first of the newer west flank tests in North Turner Valley to get the lime. Location is 1 mile due north of Model Oils No. 1, which started as a naphtha producer but turned to crude. Royalite No. 29 got the lime somewhat higher than most of the crude producers in South Turner Valley, and there is some doubt whether it is in the naphtha or crude area.

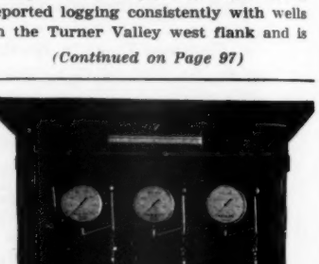
In section 28-18-2w5, Richland Royalties No. 2, LSD 5, got the lime at 6,410 feet and is deepening below 6,570 feet after striking a wet gas flow estimated at 500,000 feet a day.

In section 29-18-2w5, Commonwealth Petroleums is preparing to resume work on Command Oils No. 1, LSD 14, from 810 feet. Globe Royalties No. 1, LSD 7, has dismantled standard outfit and is installing rotary to resume from 2,475 feet. The test is being completed by Hilary Head, Robert Wilkinson and Clarence Snyder on the basis of repayment out of production with a continuing 38 per cent interest. Location is in line with Commoil No. 1 producer, a half mile north. Coronation Royalties No. 1, LSD 10, has rotary outfit rigged. In section 16-18-2w5, Okalta Oils No. 7, LSD 3, has derrick up for standard tools. Okalta No. 8, LSD 6, has derrick steel and equipment on the ground. Davies Petroleums No. 3, LSD 7, section 33-17-2w5, is ready to spud.

Okalta Structure

On the Okalta fold, west of the main Turner Valley structure, Okalta Oil Co. No. 6, LSD 3, section 30-18-2w5, is preparing to resume after running 10¾-inch casing to around 3,600 feet. This test is reported logging consistently with wells on the Turner Valley west flank and is

(Continued on Page 97)



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WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Hancock-Bush, No. 2-C.L. Santa Maria, Santa Barbara	30-10-33	4,353	redrlg. 3,960
Hancock-Bush, No. 3-H Santa Maria, Santa Barbara	30-10-34	4,300	sd. sh. drlg.
Ohio Oil, No. 3-M Santa Maria, Santa Barbara	21-10-34	2,897	sd. sh. drlg.
Mitchell, A. D., No. 2-W Santa Maria, Santa Barbara	27-10-34	4,610	flow. 2,200 b.d.
Pet. Prop., Inc., No. 1-R Santa Maria, Santa Barbara	19-10-33	2,200	bailing
Cal. Lands, Inc., No. 2 Santa Maria, Santa Barbara	26-10-34	2,376	sd. sh. drlg.
Moore, E. H., No. 10 Sugar, Santa Maria, S. Barbara	30-10-34	6,212	sd. sh. drlg.
Moore, E. H., No. 1-G Sugar, Santa Maria, S. Barbara	19-10-34	2,191	sd. sh. drlg.
Pet. Sec., No. 1-R Santa Maria, Santa Barbara	35-10-34	5,120	sd. sh. drlg.
Signal Oil, No. 1 Romalho, Santa Maria, S. Barbara	27-10-34	3,880	sd. sh. drlg.
Union Oil, No. 1-A Santa Maria, Santa Barbara	22-10-34	4,087	sd. sh. drlg.
Union Oil, No. 2 Bradley, Santa Maria, Santa Barbara	25-10-34	4,900	sd. sh. drlg.
Union Oil, No. 1 Sec., Santa Maria, Santa Barbara	20-10-34	4,933	pump. 120 b.d.
Union Oil, No. 17 Cal. Coast, Orcutt, Santa Barbara	26- 9-34	4,515	sd. sh. drlg.
Cole, F. E., No. 16 Santa Maria, Santa Barbara	23-10-34	3,275	sd. sh. drlg.
Getty, George F., No. 2-V Santa Maria, Santa Barbara	27-10-34	3,695	sd. sh. drlg.
Pac. West. Oil, No. 6-H Santa Maria, Santa Barbara	21-10-34	4,988	sd. sh. drlg.
Crude Oil Drlg., No. 1 Casmalia, Santa Barbara	19- 9-34	1,410	P.B. 845
Pima Drlg., No. 1-M Casmalia, Santa Barbara	13- 9-35	1,121	sd. sh. drlg.
Standard Oil, No. 1 Cat Canyon, Santa Barbara	27- 9-33	3,147	sd. sh. drlg.
Tweedy, A. E., No. 1 Penn, Capitan, Santa Barbara	34- 5-31	397	sd. sh. drlg.
Texas Co., No. 134 Shiells, Ventura	4- 3-19	4,480	P.B. 3,814
High Mesa Oil, No. 1 Ojai, Ventura	16- 4-22	1,230	hd. sd. drlg.
Richfield Oil, No. 1 McFarland, Camarillo, Ventura	13- 2-21	7,000	gr. sd. drlg.
Texas Co., No. 1 Edwards, Camarillo, Ventura	19- 2-21	5,674	sd. sh. drlg.
Trucano, G., No. 1 Simi, Ventura	5- 2-17	520	gr. sh. drlg.
Stallings & Senter, No. 1 Timber Canyon, Ventura	24- 4-21	422	sd. sh. drlg.
Section 20 Oil, No. 1 Sespe, Ventura	20- 5-19	1,025	hd. sh. drlg.
Speik Oil, No. 2 Sespe, Ventura	33- 5-19	3,450	bailing
Colima Oil, No. 2 Sespe, Ventura	25- 5-19	3,500	cleaning out
Condor Oil, No. 1 Dorman, Sespe, Ventura	6- 4-19	2,193	fish. bailer
Skyline Oil, No. 1-H Hopper Canyon, Ventura	13- 4-18	2,587	sd. sh. drlg.
Commander Oil, No. 6-F Hopper Canyon, Ventura	13- 4-19	2,027	cleaning out
Continental Oil, No. 8-A Grubb, S. Miguelito, Ventura	24- 3-24	5,461	sd. sh drlg.
C. C. M. Oil, No. 11 Rincon, Ventura	17- 3-24	4,166	P.B. 4,055
Rowe, W. G., No. 1 Johnson, Oxnard, Ventura	15- 1-22	958	cleaning out
Tide Water A. O., No. 19 V.L.W., Ventura, Ventura	26- 3-23	3,994	sd. sh. drlg.
Tide Water A. O., No. 32 V.L.W., Ventura, Ventura	24- 3-23	7,430	P.B. 7,210
Tide Water A. O., No. 69 Lloyd, Ventura, Ventura	27- 3-23	4,897	recmtd. 4,795
Tide Water A. O., No. 79 Lloyd, Ventura, Ventura	27- 3-23	1,864	sd. sh. drlg.
Tide Water A. O., No. 135 Lloyd, Ventura, Ventura	27- 3-23	8,475	hd. sh. drlg.
Tide Water A. O., No. 138 Lloyd, Ventura, Ventura	23- 3-23	6,895	hd. sd. drlg.
Tide Water A. O., No. 18 Hartman, Ventura, Ventura	22- 3-23	9,600	O.S. drlg.
Shell Oil, No. 92 Taylor, Ventura Ave., Ventura	20- 3-23	8,256	sd. sh. drlg.
General Pet., No. 13 Notten, Ventura Ave., Ventura	28- 3-23	9,780	sd. sh. drlg.
Amerada Pet., No. 5 Beer, Devils Den, Kern	22-26-19	5,760	gr. sd. drlg.
Little Major Oil, No. 1 Devils Den, Kern	36-25-18	236	idle
Rocima Oil, No. 1 Laymance, McKittrick, Kern	20-30-22	1,881	sd. sh. drlg.
Par Mer Oil, No. 1 McKittrick, Kern	6-31-22	2,068	idle
Standard Oil, No. 2 Randolph, Semi-Tropic, Kern	14-27-23	8,330	sd. sh. drlg.
Continental Oil, No. 2 KCL, Wasco, Kern	8-27-24	11,718	gr. sd. drlg.
Chico-Martinez Oil, No. 1 South Belridge, Kern	1-29-20	439	sd. sh. drlg.
Ohio Oil, No. 1 Ford, South Belridge, Kern	6-29-22	2,027	idle
Johnson, G. W., No. 1 Temblor, Kern	33-29-20	1,047	hd. sd. drlg.
Belridge Oil, No. 27-7 North Belridge, Kern	27-27-20	4,898	br. sh. drlg.
Belridge Oil, No. 27-8 North Belridge, Kern	27-27-20	6,499	br. sh. drlg.
Belridge Oil, No. 27-61 North Belridge, Kern	27-27-20	7,896	br. sh. drlg.
Belridge Oil, No. 28-1 North Belridge, Kern	28-27-20	6,995	br. sh. drlg.
Tide Water A. O., No. 7 Reward, No. Belridge, Kern	34-27-20	7,000	cleaning out
Tide Water A. O., No. 1-21 North Belridge, Kern	21-27-20	7,201	br. sh. drlg.
Tide Water A. O., No. 2-21 North Belridge, Kern	21-27-20	5,683	br. sh. drlg.
Richfield Oil, No. 1-A North Belridge, Kern	22-27-20	4,270	sd. sh. drlg.
Texas Co., No. 2 Martin, North Belridge, Kern	22-27-20	7,198	br. sh. drlg.
General Pet., No. 1 St. Helens, Belridge, Kern	12-28-20	5,912	sd. sh. drlg.
Crestmont Oil, No. 2 Staley, Round Mountain, Kern	8-28-29	1,862	sd. sh. drlg.
Eastmont Oil, No. 5 Olcese, Round Mountain, Kern	16-28-29	1,351	sd. sh. drlg.
McDonald, J. A., No. 2 Bell, Round Mountain, Kern	12-28-28	1,950	O.S. drlg.
Shell Oil, No. 19 Caldwell, Round Mountain, Kern	7-28-29	1,835	sd. sh. drlg.
Shell Oil, No. 2 Olcese, Round Mountain, Kern	21-28-29	1,454	sd. sh. drlg.
Cal-Western Oil, No. 4 Kernco, Round Mountain, Kern	13-28-28	1,929	pump. 325 b.d.
Vedder, D. G., No. 3 Bell, Round Mountain, Kern	12-28-28	1,950	pump. 378 b.d.
Vedder, D. G., No. 4 Bell, Round Mountain, Kern	12-28-28	1,850	O.S. drlg.
Marcan Oil, No. 2 C.L., Round Mountain, Kern	12-28-28	2,031	rig. to pump
Standard Oil, No. 27 Kern Front, Kern	15-28-27	2,230	pump. 75 b.d.
V. & W. Oil, No. 1 Robinson, Kern Front, Kern	23-28-27	2,125	sd. sh. drlg.
California Star Oil, No. 3-80 Kern Front, Kern	22-28-27	2,755	cleaning out
Kern River Oilfields, No. 25-4-B Kern Front, Kern	25-28-27	1,497	sd. sh. drlg.
Sunset Oil, No. 3-1 Wells, Mount Poso, Kern	3-27-28	1,484	cleaning out
North American Oil, No. 1 Mount Poso, Kern	26-27-27	3,135	sd. sh. drlg.
Pebble Beach Oil, No. 6 Newhope, Mount Poso, Kern	29-27-27	2,653	pump. 105 b.d.
Shell Oil, No. 1 Keystone, Deep Well Ranch, Kern	4-26-27	396	sd. sh. drlg.
Western Gulf Oil, No. 30-B KCL, Fruitvale, Kern	14-29-27	3,070	O.S. drlg.
Western Gulf Oil, No. 7-R.R., Fruitvale, Kern	14-29-27	3,540	flow. 810 b.d.
Cal-West Oil, No. 1 KCL, Fruitvale, Kern	14-29-27	2,197	sd. sh. drlg.
Pacific O. & G., No. 1-F Fruitvale, Kern	14-29-27	2,995	sd. sh. drlg.
Section Six Oil, No. 1 Johnstone, Mtn. View, Kern	6-31-29	7,564	dry; abd.
Texas Co., No. 1 Bastain, Mountain View, Kern	34-30-29	1,591	sd. sh. drlg.
Hogan Pet., No. 5 Symons, Mountain View, Kern	4-31-29	6,129	redrlg. 5,511
General Pet., No. 1 Houchin, Arvin, Kern	27-31-29	7,361	rig. to pump
McClurkin Oil, No. 1 Edison, Kern	6-30-29	2,593	cleaning out
Petrex, Inc., No. 1 Arvin, Kern	32-31-30	2,193	sd. sh. drlg.
Superior Oil, No. 1 Wagner, Rio Bravo, Kern	35-28-25	6,634	sd. sh. drlg.
Union Oil, No. 2-34 KCL, Rio Bravo, Kern	34-28-25	6,618	sd. sh. drlg.
Continental Oil, No. 1 Rosedale, Kern	12-29-26	10,210	redrlg. 9,380
Superior Oil, No. 1 Krause, Greeley, Kern	21-29-26	8,000	sd. sh. drlg.
Superior Oil, No. 9 KCL, Greeley, Kern	3-30-26	7,870	pump. water
Standard Oil, No. 11-2 KCL, Greeley, Kern	20-29-26	8,480	sd. sh. drlg.
Standard Oil, No. 11-8-A KCL, Greeley, Kern	18-29-26	7,846	O.S. drlg.
Standard Oil, No. 11-11 KCL, Greeley, Kern	17-29-26	7,820	O.S drlg.
Standard Oil, No. 11-12 KCL, Greeley, Kern	20-29-26	7,750	sd. sh. drlg.
Standard Oil, No. 12-3 KCL, Greeley, Kern	16-29-26	5,135	idle
Standard Oil, No. 17-1 KCL, Greeley, Kern	9-29-26	8,140	sd. sh. drlg.
Standard Oil, No. 15-1 KCL, Ten Section, Kern	27-30-26	8,070	cmtd. 6,313
Shell Oil, No. 32-29-A KCL, Ten Section, Kern	29-30-26	6,985	sd. sh. drlg.
Shell Oil, No. 85-25-B KCL, Ten Section, Kern	25-30-26	5,997	sd. sh. drlg.
Shell Oil, No. 52-31-B KCL, Ten Section, Kern	31-30-26	2,787	sd. sh. drlg.
Shell Oil, No. 27-30-B KCL, Ten Section, Kern	30-30-26	8,098	O.S. drlg.
Shell Oil, No. 72-14-A KCL, Canal, Kern	14-30-25	7,949	fish. cones
Ohio Oil, No. 4-E KCL, Canal, Kern	13-30-25	6,070	sd. sh. drlg.
Merritt-Annex Oil, No. 7 Midway-Sunset, Kern	25-12-24	2,965	sd. sh. drlg.
C. C. M. Oil, No. 76-6 Midway-Sunset, Kern	6-32-23	1,150	rig. to pump
Pattiway Oil, No. 4 Midway-Sunset, Kern	12-11-24	898	sd. sh. drlg.
Iriquois Oil, No. 2 Midway-Sunset, Kern	7-11-23	1,615	sd. sh. drlg.
Hallmark Oil, No. 9 Midway-Sunset, Kern	25-12-24	2,701	pump. 80 b.d
Chemeketa Oil, No. 1 Midway-Sunset, Kern	15-32-23	1,531	sd. sh. drlg.
Signal Oil, No. 4 Kendon, Midway-Sunset, Kern	35-32-23	2,373	br. sh. drlg.
Victor Oil, No. 14 Midway-Sunset, Kern	35-32-23	1,875	O.S. drlg.
Ethel D. Oil, No. 21-A Midway-Sunset, Kern	36-12-24	1,152	sd. sh. drlg.
National Oil, No. 17 Midway-Sunset, Kern	35-32-23	1,136	sd. sh. drlg.
Texas Co., No. 1 Pioneer, Midway-Sunset, Kern	33-11-23	6,003	gr. sd. drlg.
Texas Co., No. 25 Midway-Sunset, Kern	32-32-24	3,170	P.B. 3,045
Texas Co., No. 30 Midway-Sunset, Kern	32-32-24	2,660	sd. sh. drlg.
Richfield Oil, No. 11-D-A Elk Hills, Kern	1-31-24	3,359	rig. to pump
Ohio Oil, No. 2-D Tejon, Kern	23-11-19	5,384	sd. sh. drlg.
Honolulu Oil, No. 33-1 SP, Tejon, Kern	33-12-19	5,971	sd. sh. drlg.
Shell Oil, No. 4-26 KCL, San Emidio, Kern	26-11-22	4,560	sd. sh. drlg.
Pure Oil, No. 1 Cantua, Fresno	31-18-17	9,971	sd. sh. drlg.
Union Oil, No. 1 Nicholson, Cantua, Fresno	17-15-15	5,663	sd. sh. drlg.
West. Gulf Oil, No. 4 S.P.L., Cantua, Fresno	3-17-15	3,167	sd. sh. drlg.
Superior Oil, No. 1 S.P.L., Fresno	20-16-13	1,984	sd. sh. drlg.
Dauphin Dev., No. 1 Alcade, Fresno	30-21-14	3,720	gr. sd. drlg.
Jacalitos Oil, No. 1 Jacalitos, Fresno	14-21-15	5,594	sd. sh. drlg.
Pet. Sec., No. 2 Gatchell, Jacalitos, Fresno	18-20-16	1,997	sd. sh. drlg.
Central Valley Oil, No. 1 Joaquin, Fresno	1-12-20	430	sd. sh. drlg.
K. N. D. A., No. 4-18-J Kettleman North, Fresno	18-21-17	11,746	fish. D.P.
K. N. D. A., No. 67-20-J Kettleman North, Fresno	20-21-17	8,675	sd. sh. drlg.
K. N. D. A., No. 72-4-P Kettleman North, Fresno	4-22-17	5,792	br. sh. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Acd., acidized.
B.O., barrels of oil.
B.P.D., barrels per day.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
Br. sh., brown shale.
B.S., basic sediment.
Cd. or Crd., cored.
C.D., corrected depth.
Cg., coring.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging or plugged back.
P.B.P., pulling or pulled big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtr., or St. sidetracking.
S.D.P.L., shut down for pipe line.
S.D.O., or S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T.P., tubing pressure.
Tr., tract.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting for cement to set.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shutoff O.K.
W.S.O.N.G., water shutoff no good.
W.S.R. or W.O.S.R., awaiting standard rig.
Wtr., water.

K. N. D. A., No. 83-4-P Kettleman North, Fresno	4-22-17	8,500	sd. sh. drlg.
K. N. D. A., No. 27-12-P Kettleman North, Kings	12-22-17	8,060	O.S. drlg.
K. N. D. A., No. 38-12-P Kettleman North, Kings	12-22-17	7,870	gr. sd. drlg.
K. N. D. A., No. 6-6-Q Kettleman North, Kings	6-22-18	8,690	P.B. 8,189
K. N. D. A., No. 27-6-Q Kettleman North, Kings	6-22-18	8,882	reaming
Standard Oil, No. 27-21-J Kettleman North, Fresno	21-21-17	9,185	hd. sd. drlg.
Standard Oil, No. 2-11-P Kettleman North, Kings	11-22-17	7,960	gr. sd. drlg.
Standard Oil, No. 76-1-P Kettleman North, Kings	1-22-17	7,797	hd. sd. drlg
Standard Oil, No. 21-13-P Kettleman North, Kings	13-22-17	6,560	sd sh. drlg.
Standard Oil, No. 41-7-Q Kettleman North, Kings	7-22-18	3,994	sd. sh. drlg.
Superior Oil, No. 5 Huffman, Kettleman No., Fresno	29-21-17	10,475	sd. sh. drlg.
Union Oil, No. 1 King, Kettleman North, Fresno	29-21-17	8,310	cleaning out
Bandini Pet., No. 5 Whepley, Kettleman No., Fresno	35-21-17	8,795	sd. sh. drlg.
Temblor Oil, No. 1-B Kettleman Middle, Kings	25-23-18	9,138	tested wet
Amerada Pet., No. 1 Carano, Los Banos, Merced	19-10-11	7,475	hd. sh. drlg.
Standard Oil, No. 2 Weyl, McDonald Is., San Joaquin	25- 2-4	7,075	gr. sd. drlg.
Standard Oil, No. 1 Morris, Delano, Tulare	36-24-23	11,300	hd. sh. drlg.
Wilshire Oil, No. 1 Half Moon Bay, San Mateo	20- 6-5	6,055	sd. sh. drlg.
Ohio Oil, No. 1 Willard, Glenn	18-20-2	3,980	sd. sh. drlg.
Tracy Drlg., No. 2 Hanson, Rio Vista, Solano	36- 4-2	4,390	40,000 m.c.f.

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Richfield Oil, No. 2-M El Segundo, Los Angeles	12- 3-15	7,354	Schist; drlg.
Richfield Oil, No. 1-H El Segundo, Los Angeles	18- 3-14	7,305	sd. sh. drlg.
Sunshine Oil, No. 1 G.W., El Segundo, Los Angeles	12- 3-15	7,195	swabbing
Sunshine Oil, No. 2 C.W., El Segundo, Los Angeles	12- 3-15	7,126	flow. 325 b.d.
Apex Pet., No. 1-C El Segundo, Los Angeles	12- 3-15	5,155	sd. sh. drlg.
Termo Co., No. 2 El Segundo, Los Angeles	12- 3-15	2,980	sd. sh. drlg.
Ohio Oil, No. 10 Gough, El Segundo, Los Angeles	7- 3-14	7,359	flow. 713 b.d.
Texas Co., No. 6 Security, El Segundo, Los Angeles	18- 3-14	6,558	sd. sh. drlg.
Standard Oil, No. 4 Ref., El Segundo, Los Angeles	13- 3-15	7,474	plug. bottom
Standard Oil, No. 7 Ref., El Segundo, Los Angeles	13- 3-15	7,147	oil conglom.
Standard Oil, No. 8 Ref., El Segundo, Los Angeles	13- 3-15	250	sd. sh. drlg.
Howard Oil, No. 1 El Segundo, Los Angeles	12- 3-15	7,305	sd. sh. drlg.
Lakeside Oil, No. 10-1 Elsie, El Segundo, Los Angeles	12- 3-15	7,400	testing
Wilshire Oil, No. 2-1 Elsie, El Segundo, Los Angeles	12- 3-15	5,445	sd. sh. drlg.
Wilshire Oil, No. 2 Sec., El Segundo, Los Angeles	12- 3-15	5,388	sd. sh. drlg.
Standard Oil, No. 84 LAI, Inglewood, Los Angeles	17- 2-14	3,820	sd. sh. drlg.
Richfield Oil, No. 1-M Torrance, Los Angeles	16- 6-14	3,775	sd. sh. drlg.
Kavanaugh, E. C., No. 1 Palos Verdes, Los Angeles	17- 4-14	5,502	P.B. 5,262
Rolling Hills Pet., No. 1 Palos Verdes, Los Angeles	27- 4-14	2,297	sd. sh. drlg.
Tide Water A. O., No. 15 D.F., Dominguez, L. Angeles	34- 3-13	4,365	sd. sh. drlg.
Shell Oil, No. 92 Reyes, Dominguez, Los Angeles	33- 3-13	7,732	pump. 50 b.d.
Shell Oil, No. 93 Reyes, Dominguez, Los Angeles	33- 3-13	4,160	sd. sh. drlg.
Union Oil, No. 49 Hellman, Dominguez, Los Angeles	33- 3-13	4,170	sd. sh. drlg.
Union Oil, No. 56 Callender, Dominguez, Los Angeles	33- 3-13	7,300	flow. 280 b.d.
Union Oil, No. 57 Callender, Dominguez, Los Angeles	33- 3-13	7,790	cleaning out
Selbar Oil, No. 1 Harris, Dominguez, Los Angeles	33- 3-13	4,905	redrlg. 4,388
Barnsdall Oil, No. 19 O'Dea, Rosecrans, Los Angeles	18- 3-13	5,780	sd. sh. drlg.
Union Oil, No. 35 H.P., Rosecrans, Los Angeles	18- 3-13	9,850	sd. sh. drlg.
Union Oil, No. 18-R Rosecrans, Los Angeles	18- 3-13	936	sd. sh. drlg.
Texas Co., No. 5-1 Gardena, Los Angeles	30- 3-13	5,362	sd. sh. drlg.
Barnsdall Oil, No. 2-S.F., Newhall, Los Angeles	26- 4-17	6,271	hd. sd. drlg.
Burt, A. G., No. 1 Newhall, Los Angeles	26- 4-17	2,575	idle
Towsley Canyon Oil, No. 1 Newhall, Los Angeles	8- 3-16	4,205	sd. sh. drlg.
Royal Lands, No. 1 Ramona, Castaic, Los Angeles	8- 4-17	350	hd. sd. drlg.
West Coast Dev., No. 1 Saugus, Los Angeles	27- 4-16	1,206	sd. sh. drlg.
General Pet., No. 1 Blinn, Wilmington, Los Angeles	3- 4-13	2,977	sd. sh. drlg.
General Pet., No. 1 Harbor, Wilmington, Los Angeles	3- 5-13	2,341	sd. sh. drlg.
General Pet., No. 6 Harbor, Wilmington, Los Angeles	2- 5-13	2,676	O.S. drlg.
General Pet., No. 11-T Wilmington, Los Angeles	4- 5-13	2,930	P.B. 2,875
General Pet., No. 3-C Wilmington, Los Angeles	2- 5-13	2,832	sd. sh. drlg.
General Pet., No. 2-S.P., Wilmington, Los Angeles	2- 5-13	2,682	sd. sh. drlg.
Allied Pet., No. 23 Wilmington, Los Angeles	32- 4-13	2,715	O.S. drlg.
Bankline Oil, No. 4-C.Y., Wilmington, Los Angeles	34- 4-13	770	sd. sh. drlg.
Bankline Oil, No. 4-W Wilmington, Los Angeles	34- 4-13	2,356	sd. sh. drlg.
Bankline Oil, No. 1-J.C., Wilmington, Los Angeles	34- 4-13	3,387	pump. 171 b.d.
Bankline Oil, No. 2-U.P., Wilmington, Los Angeles	3- 5-13	1,910	sd. sh. drlg.
Baker Oil, No. 1 Wilmington, Los Angeles	35- 4-13	3,502	redrlg. 3,078
Black Gold, No. 7 Wilmington, Los Angeles	32- 4-13	1,450	sd. sh. drlg.
Caminol Co., No. 1-6-H, Wilmington, Los Angeles	2- 5-13	650	sd. sh. drlg.
Colter & McAdoo, No. 2 Wilmington, Los Angeles	32- 4-13	3,650	flow. by heads
Colter & McAdoo, No. 3 Wilmington, Los Angeles	32- 4-13	3,640	sd. sh. drlg.
Krieger Oil, No. 1 K. W., Wilmington, Los Angeles	32- 4-13	3,655	flow. 300 b.d.
Lokern Dev., No. 1-B Wilmington, Los Angeles	33- 4-13	2,115	sd. sh. drlg.
Macson Oil, No. 2-C, Wilmington, Los Angeles	32- 4-13	3,638	sd. sh. drlg.
Pongratz, Gus, No. 1 Webb, Wilmington, Los Angeles	32- 4-13	3,686	flow. 550 b.d.
Pongratz, Gus, No. 1-G Wilmington, Los Angeles	32- 4-13	2,485	sd. sh. drlg.
Royalty Serv., No. 1-K.Y., Wilmington, Los Angeles	33- 4-13	1,695	sd. sh. drlg.
Royalty Serv., No. 1-F Wilmington, Los Angeles	33- 4-13	3,634	flow. 220 b.d.
Richfield Oil, No. 1-G Wilmington, Los Angeles	2- 5-13	300	sd. sh. drlg.
Selegna Drlg., No. 10 Wilmington, Los Angeles	33- 4-13	5,933	flow. 250 b.d.
Selegna Drlg., No. 14 Wilmington, Los Angeles	33- 4-13	3,625	sd. sh. drlg.
Superior Oil, No. 1-C Wilmington, Los Angeles	2- 5-13	2,777	O.S. drlg.
Union Pacific, No. 52 Wilmington, Los Angeles	34- 4-13	3,480	flow. 586 b.d.
Union Pacific, No. 61 Wilmington, Los Angeles	4- 5-13	3,475	flow. 180 b.d.
Union Pacific, No. 62 Wilmington, Los Angeles	33- 4-13	3,456	O.S. drlg.
Union Pacific, No. 76 Wilmington, Los Angeles	34- 4-13	2,096	sd. sh. drlg.
Union Pacific, No. 77 Wilmington, Los Angeles	34- 4-13	3,195	flow. 274 b.d.
Union Pacific, No. 78 Wilmington, Los Angeles	3- 5-13	2,731	sd. sh. drlg.
Union Pacific, No. 79 Wilmington, Los Angeles	34- 4-13	2,168	sd. sh. drlg.
Union Pacific, No. 80 Wilmington, Los Angeles	34- 4-13	2,058	sd. sh. drlg.
Union Pacific, No. 1-EV Wilmington, Los Angeles	34- 4-13	2,970	sd. sh. drlg.
Wilbur, V. R., No. 2-S.R., Wilmington, Los Angeles	33- 4-13	3,698	pump. 120 b.d.
Wilton Oil, No. 3 Wilmington, Los Angeles	32- 4-13	850	sd. sh. drlg.
Wilmington Oil, No. 2 Wilmington, Los Angeles	32- 4-13	5,703	sd. sh. drlg.
Alford Oil, No. 3-C.Y., Wilmington, Los Angeles	22- 4-13	5,900	sd. sh. drlg.
Ramsey, W. E., No. 1 Repetto Hills, Los Angeles	27- 1-12	2,680	sd. sh. drlg.
Texas Co., No. 18 Baldwin, Montebello, Los Angeles	5- 2-11	6,193	hd. sd. drlg.
St. Helens Pet., No. 20-M Montebello, Los Angeles	6- 2-11	6,353	flow. 600 b.d.
Hilldon Oil, No. 3-B Flood Control, Los Angeles	13- 4-13	3,250	sd. sh. drlg.
Abrams, John, No. 1 Flood Control, Los Angeles	13- 4-13	4,247	C.P. 4,223
Texas Co., No. 5 Bauman, Long Beach, Los Angeles	19- 4-12	3,235	sd. sh. drlg.
Texas Co., No. 4 Gray, Long Beach, Los Angeles	20- 4-12	3,976	sd. sh. drlg.
Power, E. D., No. 3 Long Beach, Los Angeles	20- 4-12	2,996	sd. sh. drlg.
Shell Oil, No. 1 Hath., Long Beach, Los Angeles	28- 4-12	5,354	sd. sh. drlg.
Rico Pet., Inc., No. 1 Long Beach, Los Angeles	30- 4-12	4,012	cleaning out
Richfield Oil, No. 19 Haas, Long Beach, Los Angeles	19- 4-12	2,926	cmtd. 2,727
Richfield Oil, No. 6-M.D., Long Beach, Los Angeles	19- 4-12	2,774	cmtd. 2,703
Union Oil, No. 100 Santa Fe Springs, Los Angeles	6- 3-11	11,314	cleaning out
Texas Co., No. 7-W Santa Fe Springs, Los Angeles	6- 3-11	6,803	rig. to pump
Continental Oil, No. 40 Bixby, Seal Beach, Orange	2- 5-12	7,501	P.B. 6,556
Lido Pet., No. 2 Severns, Huntington, Orange	34- 5-11	5,042	sd. sh. drlg.
Standard Oil, No. 34-A Huntington, Orange	34- 5-11	3,654	cmtd. 3,256
Shell Oil, No. 4-1 Columbia, Olinda, Orange	9- 3-9	8,021	P.B. 5,000
Brea Canyon Oil, No. 36 Brea Canyon, Orange	2- 3-10	4,552	redrlg. 2,760
Standard Oil, No. 127 Murphy, West Coyote, Orange	18- 3-10	3,240	cmtd. 3,224
Severns Drlg., No. 2 McNally, West Coyote, Orange	18- 3-10	7,272	redrlg. 4,151
Union Oil, No. 29 Chapman, Richfield, Orange	29- 3-9	9,780	sd. sh. drlg.
Oil Income, No. 1 Anderson, Yorba, Orange	22- 3-9	2,182	P.B. 1,765
Hjorth & Mohr, No. 1 Yorba, Orange	22- 3-9	1,403	cleaning out
Berco Oil, No. 1 Millhous, Yorba, Orange	22- 3-9	1,750	drlg. oil sand
Angelus Oil, No. 1 Jacobs, Yorba, Orange	22- 3-9	1,691	P.B. 1,605
Fairfield, F. E., No. 1 Dutton, Yorba, Orange	22- 3-9	1,510	idle
Oliver & Owen, No. 1 Moritz, Yorba, Orange	22- 3-9	1,650	cleaned out
Shell Oil, Core Hole H., Yorba, Orange	16- 3-9	2,670	core hole
Selegna Oil, No. 1-A Chino, San Bernardino	12- 3-8	1,325	sd. sh. drlg.

KANSAS

Week Ending January 8 (Descriptions are East unless marked otherwise)

Barber County

Helmerich & Payne No. 1 Winter, NW SW sec. 16-32-10w. Drlg. 4,420 ft.

Kansas Oil Corp. No. 1 Mease. NE SE SE sec. 27-30-11w. Arb. 4,896-4,910 ft.; S.D.O.

Palmer Oil Corp. et al No. 1 Warwick, C NW sec. 29-31-10w. Rig.

Pryor & Lockhart No. 1 Pickens, CWL E½ SW sec. 34-30-13w. Arbkl. 4,665-4,745 ft.; D.&A.

Barton County

Elmer Ash et al No. 1 Frees, NW cor. sec. 34-16-11w. Drlg. 2,980 ft.

R. E. Day et al No. 1 Felts, SE SE NE sec. 14-16-12w. S.D. 1,875 ft.

Martin & Foraker et al No. 1 Dick Est., NE SW SW sec. 31-19-11w. Rig.

C. L. Price No. 1 Hammeke, NE NE SW sec. 12-18-12w. Sil. 3,415-27 ft.; 1,800 ft. O.I.H.; bails 4 bbls. wtr. every other day.

Shell Pet. Corp. No. 1 Eckart, SE SE SW sec. 13-16-14w. 400 ft. W.I.H., 3,423 ft.; D.&A.

Sinclair Prairie Oil Co. No. 1 Oser, NE SE sec. 17-16-11w. Drlg. 1,993 ft.

Thayer Drlg. Co. et al No. 1 Soderstrom, SE NW sec. 21-17-13w. Set 7-in. csg. 2,803 ft.; C.O. 2,825 ft.

Butler County

T. S. Dustin No. 1 Miley, SE NW NE sec. 17-27-5e. S.D. 395 ft.

Steinbuchel et al No. 1 Fox, NW SE NE sec. 25-26-3e. S.D. 1,010 ft.

Chautauqua County

Harrison No. 1 Brown, NE SE NE sec. 19-34-10. S.D. 820 ft.

I. W. Siegel No. 1 Temple, SW cor. sec. 31-32-12. S.D. 400 ft.

Clark County

Olson Oil Co. No. 1 Lenman, SE SW sec. 20-32-31w. Drlg. 5,192 ft.

Olson Oil Co. et al No. 1 Watkins, SW NW sec. 23-32-21w. S.D.O. 6,660 ft.

Cowley County

Dickey Oil Co. No. 1 Kansas G. & E., NE cor. sec. 22-34-3e. Chat 3,302-47 ft.; S.D.O.

Roth et al No. 1 Fry, NW SW SW sec. 8-31-3e. Drlg. 2,660 ft.

Smith & Price No. 1 Henderson, SW SW sec. 25-32-6. Arb. 3,330-70 ft.; D.&A.

Trees Oil Co. and Talbott No. 1 McMinn, NE NW sec. 16-31-6. Drlg. 780 ft.

Earl Wakefield No. 1 Whitson, SW NE SE sec. 8-32-4e. T.D. 3,294 ft.; P.B. 3,292 ft.; pmpd. 40 B.O. and 40 B.W. 8 hrs.

Ellis County

C. L. Carlock No. 1 Heyle, SE NW sec. 14-13-16w. Drlg. 3,298 ft.

General Mach. & Tool Co. No. 1 Jensen, SW SE NE sec. 26-12-18w. Rng. 6-in. csg. 3,670 ft.

Glimac Oil Co. et al No. 1 K. C. Life, SE SW NW sec. 5-11-18w. Set 7-in. csg. 3,328 ft.; T.D. 3,370 ft.; R.U.S.T.

Hays & Sackrider No. 1 Windholtz, NE cor. sec. 2-13-16w. Drlg. 345 ft.

J. J. Muth et al No. 1 Penney, C N½ NE SE sec. 29-14-18w. C.O. 350 ft.

P. G. Reynolds et al No. 1 Karlin, NW cor. sec. 13-12-18w. Sil. 3,674-75 ft.; U.R. 6-in. csg.

Watchorn O. & G. Co. No. 1 Brown, NE SE sec. 34-13-17w. T.D. 3,529 ft.; acd.; pot. 515 B.O. and much wtr.; comp.

Ellsworth County

Cities Service Oil Co. et al No. 1 Schroeder, C N½ N½ NW sec. 29-17-9w. Drlg. 830 ft.

Colonial Oil Co. No. 1 Hogy, NW cor. sec. 16-16-10w. Drlg. 2,115 ft.

Hinkle et al No. 1-A Andrea, NE SE sec. 7-17-10w. H.F.W. 3,411-16 ft.; D.&A.

Ralph Wixson et al No. 1 Peterman, SW cor. sec. 28-17-10w. S.D. 1,920 ft.

Greenwood County

John Nichols et al No. 1 Central Life, SE SW sec. 35-25-12. Spd. and S.D.

Harvey County

Allison et al No. 1 Hawks, SE SW NE sec 16-24-1w. Drlg. 3,640 ft.

National Ref. Co. No. 1 Brown Bros., NW SE NE sec. 22-23-2w. Drlg. 2,255 ft.

Jackson County

Lemmick Oil Co. No. 1 Marble Savings Bank, NE cor. sec. 26-9-14. Spd. and S.D.

Jewell County

Hollingsworth Bros. No. 1 Wolfe, NE SW SE sec. 14-4s-8w. Spd. and S.D.

Lane County

Phillips Pet. Co. No. 1 Kees, C SE SE sec. 3-19-30w. Drlg. 3,040 ft.

Marion County

Tom Palmer, Inc. No. 1 Matz, SW SE SE sec. 8-19-1e. H.F.W. 3,500-05 ft.; T.D. 3,520 ft.; D.&A.

McPherson County

Archer & Crane No. 1 Templin, NW SW SE sec. 32-17-3w. C.O. 2,200 ft.

Boyle & Grossman No. 1 Diener, SE SE NE sec. 35-19-1w. U.R. 6-in. csg. 3,118 ft.

Carter Oil Co. No. 1 Hoglund, C W½ SW NW sec. 8-17-3w. Arb. 3,542-69 ft.; P.B. 3,373 ft.; set 7-in. csg. 3,347 ft.; W.O.C.

Meade County

Pacific Mid-West Co. No. 1 Rexford, NE SE SW sec. 8-30-29w. S.D. 200 ft.; (cor.).

Ness County

Continental Oil Co. No. 1 Olson, SW NW SE sec. 5-18-25w. T.D. 4,325 ft.; acd.; waiting.

Marshall Drlg. Co. et al No. 1 Anderson, SW NW sec. 23-16-24w. Spd. and S.D.

Trojan O. & G. Co. No. 1 Moses, C SW NW sec. 10-18-25w. S.D. 500 ft.

Trojan O. & G. Co. No. 1 Page Milling Co., SE SE NW sec. 36-18-26w. Fsg. 3,265 ft.

Phillips County

C. W. Davidson et al No. 1 Elliff, SE NE NE sec. 35-5-18w. S.D. 575 ft.

Pratt County

Helmerich & Payne et al No. 1 Hoeme, SE NE sec. 20-26-12w. Arb. 4,427-70 ft.; D.&A.

Ohio Oil Co. No. 1 Howell, C SW SW sec. 21-29-15w. Drlg. 3,980 ft.

Skelly Oil Co. et al No. 1 Adams, SE NW NE sec. 2-28-11w. T.D. 4,300 ft.; P.B. 4,200 ft.; acd.; 43,485,000 ft. gas; comp.

Reno County

Carey et al No. 1 McPheeters, NE NW sec. 22-26-8w. Drlg. 2,770 ft.

McCole et al No. 1 Mathews, SW NW NW sec. 15-24-10w. S.D. 419 ft.

Westgate-Greenland et al No. 1 Popp, SW SW NE sec. 7-25-4w. Drlg. 4,095 ft.

Rice County

Joe Aylward No. 1 Welhe, SW NE sec. 23-18-9w. Drlg. 2,525 ft.

Price et al No. 1 Gemeinhardt, NE SE sec. 18-18-10w. Drlg. 1,500 ft.

Skiles et al No. 1 Campbell, SE NE sec. 28-19-9w. T.D. 3,210 ft.; acd.; pmpd. 104 B.O. in 4 hrs.

Western Kansas Oil No. 1 Bailey, SW NW sec. 19-20-6w. Set 12-in. 129 ft.; W.O.C.

W. E. Witt et al No. 1 Fair, NW SE SE sec. 4-22-8w. Pay sd. 3,338 ft.; T.D. 3,346 ft.; increasing oil.

Rooks County

Graham et al No. 1 Fike, SW cor. sec. 9-9-17w. T.D. 3,326 ft. pmpd. 50 B.O. and 35 B.W. in 8 hrs.; S.D.O.

Producers Oil Co. No. 1 Ham, SW SW NW sec. 25-7-19w. S.D. 330 ft.

Rush County

Duwe & Brouk No. 1 Lebsack, SE SE NE sec. 13-16-16w. Sil. 3,492-95 ft.; 1,500 ft. sulfur water in hole in 2½ hrs.; T.D. 3,512 ft.; S.D.O.

Wakefield & Brouk No. 1 Kerbs, NW NW SE sec. 11-17-16w. H.F.W. 3,626-29 ft.; D.&A.

Russell County

Emrichs et al No. 1 Anderson, NE SE SW sec. 33-15-11w. Spd. and S.D.

Jones & Shelburne No. 1 Short, NE cor. sec. 21-15-12w. Drlg. 2,970 ft.

Phil-Han & Hinkle No. 1 Reinhardt, SE SW sec. 19-14-14w. Pay 3,242-43 ft.; 2,800 ft. O.I.H.; C.O.

Shields et al No. 1 Rogg, NW SW sec. 28-14-13w. Drlg. 2,625 ft.

Winkler & Koch No. 1 Jones, SE SE NW sec. 22-14-13w. Sil. 3,180 ft.; S.D.O.

Sedgwick County

Frank Hudson et al No. 1 Fulton, NE SE sec. 35-28-1e. Fsg. 1,550 ft.

McKnab No. 1 Garrett, SE SW SW sec. 18-29-2e. S.D. 100 ft.

I. W. Murfin et al No. 1 Martin, SE NW sec. 32-28-1e. T.D. 3,491 ft.; acd.; swb. 45 B.O. in 24 hrs.

Reeves & Kinnan No. 1 Heim, SW cor. sec. 5-29-3w. Drlg. 3,290 ft.

Steinbuchel et al No. 1 McAdams, SW NE sec. 28-20-1e. Rng. 12-in. 1,020 ft.

Union O. & R. Co. et al No. 1 Howell, SW cor. sec. 6-29-1e. T.D. 2,400 ft.; S.D.

Stafford County

Cardinal Oil Co. et al No. 1 Sittner, SW cor. sec. 4-22-12w. Drlg. 2,920 ft.

Hipple et al No. 1 Moses, NW SW sec. 9-22-13w. H.F.W. 3,804-07 ft.; may P.B.

Fred Rust et al No. 1 Sims, NW SW sec. 8-23-11w. Cd. 3,719-29 ft.; D.&A.

Torry & Feaster et al No. 1 Heggy, NE SW sec. 26-23-11w. Drlg. 2,400 ft.

Sumner County

Cities Service Oil Co. No. 1 McCoy, SE SW sec. 11-35-2e. Drlg. 3,690 ft.

W. M. McKnab No. 1 Blair, SW cor. sec. 7-30-1e. T.D. 3,869 ft.; swbs. 75 to 100 B.O.P.D.

Saco Oil Co. No. 1 Phipps, SW SE NE sec. 24-30-1w. Spd. and S.D.

Tregо County

Carlock No. 1 Kinzel, SW SW sec. 9-13-22w. Spd. and S.D.

NEBRASKA WILDCATS

L. R. Page et al No. 1 Bonham, C SE SE sec. 31-1n-1e, Jefferson County. Arbkl. 3,240 ft.; T.D. 3,344 ft.; D.&A.

Arab Pet. Corp. et al No. 1 Ogle, SE SE sec. 9-1n-14e. Viola 3,019 ft.; Granite sec. 9-1n-14e, Richardson County. Viola 3,019 ft.; Gran. 3,423 ft., T.D.; S.D.O.

OKLAHOMA

Week Ending January 8

NORTHERN OKLAHOMA

Beckham County

Mid-American Oil Co. No. 1-A Biscoe, SW cor. sec. 28-8-22w. Drlg. 2,435 ft.

Caddo County

Indian Terr. Illum. Oil Co. No. 1 Dome-Bo, C NE SE sec. 29-6-10w. T.D. 6,-900 ft.; to run pipe and test.

Cleveland County

W. A. Delaney et al No. 1 Bugher, SE SE SW sec. 12-7-2w. Rig.

Harper-Turner No. 1 Pollock, C W½ NW NW sec. 13-9-2w. T.D. 6,850 ft.; drld. by pipe to 6,807 ft.; cmtd.

Creek County

M. W. Mosier et al No. 1 Holcomb, SE SW NW sec. 19-18-8. T.D. 3,018 ft.; 2,-000 ft. W.I.H. and S.S.O.; S.D.

Garfield County

H. R. Hollenback et al No. 1 Clark, NW cor. sec. 34-21-6w. Drlg. 6,772 ft.

Garvin County

B. C. D. Edwards No. 1 Clark, NE cor. sec. 16-3n-3e. T.D. 2,676 ft.; P.B. 2,088 ft.; perf.; swb. 60 bbls. fluid in 24 hrs.; recmtd. csg.; W.O.C.

Grady County

Doyle Pet. Co. No. 1 Huffine, NW NW SE sec. 30-5-8w. Drk.

Gulf Oil Corp. No. 1 Thomas, SW NW NW sec. 14-4-5w.. Drlg. 9,640 ft.

Grant County

Magnolia Pet. Co. No. 1 Reynolds, NE NE SE sec. 19-25-5w. T.D. 5,480 ft.; fsg.

Greer County

R. W. McDonald No. 1 Fite, SE SE sec. 34-7-21w. Drlg. 160 ft.

J. I. Medlin et al No. 1 Broudie, NW cor. sec. 5-6n-20w. T.D. 90 ft.; (cor.); S.D.

Hughes County

Kenneth Ellison et al No. 1 Metropolitan, C NE NE sec. 14-7-9. T.D. 3,685 ft.; S.D.; repairs.

Phillips Pet. Co. No. 1 Becker, NE NW SW sec. 8-5-10. Wilcox 5,747 ft.; T.D. 5,757 ft.; spotted S.O.&G.; to set csg.

Pure Oil Co. No. 1 Rogers, SE SE NE sec. 18-8-12. T.D. 5,054 ft.; P.B. 3,394 ft.; drlg. cmtd. 3,515 ft.

Kay County

F. S. Freeland et al No. 1-A Watson, NE NW NW sec. 28-28-1w. Rig on ground.

Helmerich & Payne No. 1 Scott, SE SE NE sec. 20-28-1w. Wilcox 3,519 ft.; cg. below 3,565 ft.

E. W. Jones et al No. 1 Dorse, SE SW NW sec. 25-26-1w. T.D. 4,267 ft.; D.&A.

E. J. Shaffer et al No. 1 McKee, NE NW sec. 20-28-1w. T.D. 2,500 ft.; S.D.

Kiowa County

Gauntt & Baker No. 1 Parks, NW NW SW sec. 29-7-20w. Drlg. 595 ft.

Hughes & Reese No. 1 Fultz, SE cor. sec. 10-6-18w. T.D. 1,238 ft.; S.D.

Major County

Ed V. Parsons et al No. 1 Patzkowsky, C NW sec. 10-20-11w. Rig.

Okfuskee County

Mid-Continent Pet. Corp. No. 1 Inland, SW NE SW sec. 10-13-10. Drlg. 2,-703 ft.

Okmulgee County

Phillips Pet. Co. No. 1 Wood, NW SW SW sec. 31-11-13. Drlg. 3,121 ft.

Payne County

Mid-Continent Pet. Corp. No. 1 Ramsey, SW SW NW sec. 18-18-2e. Wilcox 4,-768 ft.; T.D. 4,771 ft.; good odor; set 7-in. 4,707 ft.

Pontotoc County

H. W. Lee No. 1 Weatherly, NW SE NW sec. 24-1n-7. Spd. and S.D.

Jack Lynch et al No. 1-A Parker, SW SW SE sec. 17-4-8. Spd.

H. Riddle et al No. 1 fee, NW SW SE sec. 11-3n-5e. Drlg. 2,499 ft.

Union Dev. Co. No. 1 Abbott, SW NW NE sec. 34-3-6. S.D. 3,320 ft.

Seminole County

H. V. Woodson and Marydun Oil Co. No. 1 Gilliland, SE SW sec. 24-11-7. T.D. 3,713 ft.; prep. to resume work.

Texas County

Hagey et al No. 1 Peck, C NE sec. 6-1n 13ecm. T.D. 2,842 ft.; pulled csg. and set whipstock.

SOUTHERN OKLAHOMA

Atoka County

C. M. Sheldon and Gardner Pet. Co. No. 1 Lee, NE NW SW sec. 2-4s-10e. T.D. 2,034 ft.; bailed dry; to deepen.

Bryan County

Southern Oil Co. No. 1 Henry. NW NW NE sec. 10-8s-7. Drlg. 850 ft.

Choctaw County

V. K. Chapman and T. N. Low No. 1 Hallum, NE NW NW sec. 4-7s-20. T.D. 260 ft.; S.D.

J. A. True No. 1 Boby, C NW SW sec. 17-7s-19e. T.D. 2,044 ft.; S.D.O.

Coal County

Carter Oil Co. No. 1 Claytor, C W½ NE SW sec. 27-2n-9e. T.D. 6,715 ft.; P.B 6,480 ft.; acd. at 6,148-6,248 ft.; swb. 323 B.O. net in 18 hrs.; C.O.

Cotton County

Bowers & Wise No. 1 Pendergraft, NW SE SW sec. 4-4s-12w. Spd. 16 ft.; S.D.

Jefferson County

Massad & Swansberger No. 1 Barrett, NE SE SE sec. 14-6s-6w. T.D. 1,890 ft.; S.D.

Johnston County

Patton et al No. 1 McCrummins, C SW SW NE sec. 16-1s-6e. S.D. 1,380 ft.

W. T. Sheldon No. 1 Chapman. C NW NW sec. 26-4s-6e. Drlg. 2,684 ft.

Marshall County

Paul Robb et al No. 1 Vittitoe, C NE SE sec. 11-5s-4e. O.W.D.D.; C.O. to 720 ft.; S.D.

Murray County

Meyer & Greenup No. 1 Arbuckle, NW NW NE sec. 18-2s-3e. Spd. and S.D.

Sinclair Prairie Oil Co. No. 1 Lancaster Trust, C SW NE sec. 10-1-2e. T.D. 4,404 ft.; freeing stuck pipe.

Stephens County

Coline Oil Co. No. 1 Johnson, C SW SE SE NE sec. 1-2n-8w. T.D. 10,000 ft.; P.B 9,164 ft.; cmtd. bad hole at 8,674 ft.; W.O.C.

Helmerich & Payne No. 1 Pfile, SW cor sec. 1-2s-7w. Cd. 3,955-73 ft.; stuck pipe.

Tillman County

Cavens et al No. 1 Southerland, SW SW NW sec. 35-4s-16w. T.D. 44 ft.; S.D.

Tom Walker No. 1 Bowman, SW SW NW sec. 10-4s-17w. S.D. 200 ft.

ARKANSAS

Clark County

Coker Oil Corp. No. 1 Coke, NW sec. 14-10-20. T.D. 2,770 ft.; hd. rk.

Columbia County

Kerr-Lynn Oil Co. No. 1 Barnett. sec. 14 17-20. T.D. 6,323 ft.; S.D.; washing to bttm.

E. O. Olds No. 1 Dennis, NE SE SW sec. 4-17-21. S.D.; contr. depth 4,513 ft.;

Crittendon County

Manning & Martin No. 1 Cartwright, SW cor. sec. 16-7n-8e. Drlg. 3,500 ft.

Dallas County

L. S. Gist No. 1 J. H. Goodgame, NW sec. 26-10-16. D.&A. 2,097 ft.

LaFayette County

Lillian Taubel et al No. 1 Tatum, NE cor. SE NW sec. 18-16-22. R.U.

Miller County—Rodessa

American Liberty Oil Co. No. 1 Treadway. NE sec. 10-20-28. Comp.; 22 B.P.H.; open tbg.; T.D. 6,151 ft.

W. C. Feazel No. 1 Farmer, SE sec. 13-20-28. Set 7-in. csg. 6,035 ft.; T.D. 6,-098 ft.; comp.; 25,000,000 ft. gas and 4 B.P.D. dist.; open flow; C.I.; T.D. 6,-098 ft.

Rodger Lacy No. 2 Grogan, NE E½ W½ sec. 15-20-28. Set 7-in. csg. 6,015 ft.; T.D. 6,042 ft.; comp.; 120 B.P.D.; open tbg.; T.D. 6,042 ft.

R. H. Long No. 2 Greer, NW NE sec. 10-20-28. T.D. 6,146 ft.; comp.; 20 B.P.H; ½-in. ck.; T.D. 6,147 ft.

R. H. Long No. 3 Greer, SE cor. NE SE sec. 10-20-28. R.U.

McClanahan et al No. 1-C Capps, E½ W½ Fract. sec. 14-20-28. Set 7-in. csg. 5,-957 ft.; T.D. 6,048 ft.

R. W. Newell No. 1 Thomas, NW SE sec. 12-20-28. Drlg. 4,548 ft.

Nivia Oil Corp. No. 1 Cross, SE cor. SE NE sec. 11-20-28. T.D. 6,106 ft.; set 7-in. csg. 6,104 ft.; perf. 6,040-95 ft.; acid.; S.D.

J. R. Ostrom No. 1 J. O. Gerrald, NW E½ sec. 15-20-28. T.D. 6,079 ft.; S.D.

Roberts Bros. Drlg. Co. No. 1-B Capps, C sec. 10-20-28. Drlg. 6,002 ft.

Skelly Oil Co. No. 2 Thomas. NE cor. E½ SW sec. 12-20-28. Drlg. 3,047 ft.

S. O. Thomason No. 1 Greer, SW SW NW sec. 11-20-28. O.T.D. 5,809 ft.; sdtrkd. 3,500 ft.; T.D. 6,168 ft.; comp.; 60 B. P.H.; 1-in. ck.; 7-in. csg. 6,141 ft.; T.D. 6,168 ft.

Thompson & Joffra No. 1 Treadway, SE NE sec. 10-20-28. Drlg. 5,821 ft.

Nevada County

Benedum & Trees Oil Co. No. 1 Mitchell. Set 7-in. csg. 2,145 ft.; T.D. 2,146 ft.

Union Products & Pet. Co. No. 4 Haynie. NW sec. 6-14-20. 6-in. csg. 1,192 ft.; sd.; S.O. 1,170-78 ft.; W.O. perf.

Bruce E. Wallace No. 2 Haynie, SE cor. sec 5-14-21. S.D. wtr. 28 ft.

Ouachita County

A. H. Tarver et al No. 1 Dean Est., SW SE sec. 16-14-19. Cg. 2,090 ft.

O. F. Whittacker No. 2 Guttry, NW sec. 21-15-19w. Sd. 2,164-2,208 ft.; W.O. pmp.

Pulaski County

A. L. Kitselman, No. 2 A. L. Kitselman Jr., SE SE SW sec. 2-1s-13e. S.D. 1,-821 ft.

Union County—Schuler

E. M. Jones No. 3 Marine Oil Co., NE NW SE sec. 17-18-17. Drk.

E. M. Jones No. 4 Marine Oil Co., SE SW SE sec. 17-18-17. Comp.; 54 B.P. H.; ½-in. ck.; 7-in. csg. 7,604 ft.; T.D. 7,610 ft.

Lion Oil Ref. Co. No. 1-A M. D. Justiss; NE NW NE sec. 19-18-17. Comp.; 1,-989 B.P.D.; ½-in. ck.; T.D. 7,647 ft.

Lion Oil Ref. Co. No. 1 Marine Oil Co., NE SE SW sec. 17-18-17. Set 7-in. csg. 7,645 ft.; T.D. 7,645 ft.; comp.; 1,780 B.P.D.

Lion Oil Ref. Co. No. 2 Marine Oil Co., SW cor. E½ SE¼ sec. 17-18-17. Loc.

Lion Oil Ref. Co. No. 4-A Edna Morgan, NW cor. Lot 1, SW sec. 18-18-17. Drk.

Lion Oil Ref. Co. No. 5-B Morgan, SE cor. W½ SE sec. 18-18-17. R.U.

Lion Oil Ref. Co. No. 4-B Edna Morgan, NW SW SE sec. 18-18-17. Drlg. 6,-895 ft.

Lion Oil Ref. Co. et al No. 1-C D. and J. C. Morgan, NE SE SE sec. 18-18-17. Oil sd. 7,518-42 ft.; T.D. 7,604 ft.

Marine Oil Co. No. 3 fee, SW sec. 17-18-17. Drlg. 6,990 ft.

Marine Oil Co. No. 3 Justiss, NE cor. Lot 7, NW sec. 18-18-17. R.U.

Marine Oil Co. No. 4 Justiss, cen. Lot 7, NW sec. 18-18-17. R.U.

Phillips Pet. Co. No. 1 First Natl. Bk., NE SW sec. 17-18-17. Drlg. 4,698 ft.

Phillips Pet. Co. No. 1 Jennings, NW SW NE sec. 18-18-17. 7-in. csg. 7,708 ft.; T.D. 7,733 ft.

Phillips Pet. Co. No. 2 Justiss, NW sec. 18-18-17. Drlg. 6,827 ft.

Phillips Pet. Co. No. 2 Marks, SW sec. 18-18-17. Drlg. 6,682 ft.

Alice Sydney Oil Co. No. 3 Morgan, NW NE SE sec. 18-18-17. 7,025 ft.

Union County—Other

Penn-Ark. Pet. Corp. No. 1 Raulston, sec. 12-17-14. Fsg. 3,175 ft.

LOUISIANA

NORTH LOUISIANA PROVEN

Caddo—Rodessa

F. W. Burford No. 1 Cleveland, NW S½ sec. 2-23-16. Comp.; 264 B.P.D.; ¼-in. ck.; T.D. 5,985 ft.

F. W. Burford No. 2 Terry, NE sec. 2-23-16. Sd. 5,695-6,000 ft.; comp.; 25 B. P.H.; 1-in. ck.; T.D. 6,048 ft.

F. W. Burford No. 3 Terry, sec. 2-23-16. Drlg. sh.&L. 5,105 ft.

Clark Oil Corp. No. 1-C Sharp, sec. 4-23-16. Drlg. 5,101 ft.

Driscoll Jt. No. 1 Muslow, SE NW NE sec. 4-20-15. 6⅝-in. csg.; T.D. 2,175 ft.

Standard Oil Co. of La. No. 1 Spearman, NE SE sec. 3-23-16. Drlg. 2,564 ft.

Standard Oil Co. of La. No. 1 Terry, SE SW sec. 2-23-16. Set 7-in. csg. 5,960 ft.; tstg. 5,992 ft.

Standard Oil Co. of La. No. 2 Terry, sec. 2-23-16. Drlg. 5,129 ft.

Alice Sydney Oil Co. No. 1 Alexander, NW cor. sec. 3-23-16. Drlg. 5,903 ft.

R. G. Trippett No. 1 Parker, NE cor. SE sec. 2-23-16. T.D. 6,022 ft.; tstd. 500,-000 ft. gas; 2,000 ft. oil in hole; to acd.

Union Prod. Co. No. 5 Harris, sec. 10-23-16. Drlg. 5,855 ft.

Union Prod. Co. No. 6 Harris, sec. 10-23-16. Drlg. 2,905 ft.

Union Prod. Co. No. 7 Starke, SW sec. 8-23-16. T.D. 5,960 ft.; comp.; 225 B.P. D.; 24/64-in. ck.; T.D. 6,000 ft.

G. H. Vaughn No. 1 Reeves, NE cor. sec. 3-23-16. Set 5½-in. csg. 5,953 ft.; T.D. 5,983 ft.

G. H. Vaughn No. 1 Sartor, NE sec. 3-23-16. Comp.; 50 B.P.H.; 1-in. ck.; T.D. 6,026 ft.

N. LOUISIANA WILDCATS

Bienville Parish

Gulf Ref. Co. No. 1 Goodpine, sec. 25-14-8. Cg. sh. 6,867 ft.

Bossier Parish

Premier Inv. Co. No. 1 McDade, SE SW NE sec. 28-19-11. Rmg.; T.D. 1,110 ft.

Triangle Drlg. Co. No. 1-A Herold, NE NW sec. 13-17-12. Set 5½-in. csg. 3,094 ft.; T.D. 3,114 ft.

Union Prod. Co. No. 1-B Kerr Unit, SE sec. 24-17-12. Cg. L.&sh. 5,080 ft.

Caddo Parish

W. D. Chew No. 4 Spell, SE sec. 29-21-15. Set 6⅝-in. csg. 1,417 ft.; W.O.C.

W. P. Clark No. 1 Dyer, C sec. 10-20-16. Tstd. dry; W.O.; T.D. 2,279 ft.; P.B. 2,240 ft.

Mrs. O. P. Clement No. 1-B Caddo Lvy. Bd., NE sec. 5-20-16. T.D. 2,312 ft.; set 4-in. csg. 1,550 ft.; S.D.

D. C. R. Oil Co. No. 2 Sibley, SE cor. SE NW sec. 15-19-14. Set. 7-in. 2,447 ft.; T.D. 2,494 ft.; comp.; 10 B.P.D.; pmp.

Double "H" Oil Co. No. 1 Goodwin, NW cor. sec. 33-21-15. S.D. 1,015 ft.; high wtr.

W. D. Flynn No. 3 Natalie, SW cor. sec. 10-21-16. S.D. 50 ft.

Gulf Oil Corp. No. 6 Curtis, SE sec. 19-20-15. T.D. 2,235 ft.; comp.; 5 B. P.D.; pmpg.

R. E. Kennedy No. 1 Wells, SE SW sec. 10-21-15. Set 6-in. csg. 1,565 ft.; acidized; comp.; pmp. est 30 B.P.D.; T.D. 1,730 ft.

Louisiana Oil Prod. Co. No. 3-D Muslow, SE cor. sec. 5-20-15. T.D. 2,156 ft.; set 7-in. csg. 2,144 ft.

Louisiana Oil Prod. Co. No. 4-D Muslow, SE cor. sec. 5-20-15. Set 7-in. csg. 2,134 ft.; T.D. 2,144 ft.

Louisiana Oil Prod. Co. No. 14-B Muslow, sec. 4-20-15. S.D. 2,130 ft.; high wtr.

La. Oil Prod. Co. No. 3-C Muslow, sec. 9-20-15. Set 7-in. csg. 2,136 ft.; T.D. 2,172 ft.; W.O.S.R.

Magnolia Pet. Co. No. 22 Dillon Hrs., NE NE sec. 23-21-15. W.O.S.R. 1,730 ft.

J. F. Mitchell No. 1 Muslow, NE cor. sec. 31-21-15. R.U.

Patterson & O'Marr No. 1 Player, C sec. 26-21-15. Comp.; 5 B.P.D.; T.D. 1,-604 ft.

Prairie River Synd. No. 1 Hutchinson, NE cor. SW NW sec. 15-15-12. D.&A.; T.D. 9,141 ft.

A. D. Robinson No. 1 Wilkinson, sec. 22-20-14. Set 5⅛-in. csg. 2,400 ft.; T.D. 2,451 ft.

J. E. Sedberry No. 1 Dickinson, NW sec. 15-19-14. Drlg. 2,060 ft.

J. J. Shulman No. 1 Hobbs, NW sec. 28-21-15. W.O.S.R. 1,630 ft.

R. G. Trippett and D. C. R. O. Co. No. 5 School Bd., sec. 16-19-14. Set 7-in. csg. 2,432 ft.; T.D. 2,460 ft.; comp.; pmp. 40 B.P.D.

R. G. Trippett & D. C. R. Oil Co. No. 6 Sch. Bd., SE cor. NE sec. 16-19-14. D.&A. 2,734 ft.

Catahoula Parish

G. C. Foster et al No. 1 Peck, S½ sec. 38-10-8e. Set 16-in. csg. 21 ft.; S.O.

Claiborne Parish

Atlantic Ref. Co. No. 2-B Bean, C S½ NW NE sec. 1-5-38. Drlg. 850 ft.

Atlantic Ref. Co. No. 1-D Patton. C N½ SE SE sec. 29-21-4. Drlg. L. 4,931 ft.

E. W. Gill No. 2 English, NW SE sec. 29-21-4. Set 5½-in. csg. 5,134 ft.; tstg. 5,168 ft.

T. L. James & Co. No. 1 Tanner, NE NE sec. 32-21-4. Comp.; 40 B.P.H.; ½-in. ck.; T.D. 5,220 ft.

T. L. James & Co. No. 2 Tanner, C E½ NE NE sec. 32-21-4. Comp.; 35 B.P.H.; ½-in. ck.; T.D. 5,252 ft.

W. L. McClanahan No. 1 J. T. Lewis, W½ SW SE sec. 25-20-7. S.D. 5,507 ft.

Magnolia Pet. Co. No. 1 Fowler, C W½ NW SE sec. 28-21-4. Drlg. 3,950 ft.

A. O. Olson No. 6-A Patton Est., sec. 3-21-4. Comp. 50 B.P.H., ½-in. ck.; T.D. 5,141 ft.

C. R. Schuster No. 1 S. Lloyd, SW SW sec. 2-20-5. T.D. 5,060 ft.; C.O.; W.O.

Sloan & Zook No. 6 Patton Est., C W½ NE SW sec. 1-20-5. Loc.

Union Prod. Co. No. 2 Brownfield, sec. 5-19-5. O.W.D.D.; cg. 8,696 ft.

Union Prod. Co. No. 1-A Kilpatrick, sec. 11-19-6. Drlg. 1,597 ft.

G. H. Vaughn No. 3 Eppinger, C S½ NW SW sec. 29-21-4. Set 10¾-in. csg. 872 ft.; W.O.C.

Vaughn No. 2 King, N½ SE SE sec. 30-21-4. Comp.; 50 B.P.H.; ½-in. ck.; T.D. 5,135 ft.

Concordia Parish

Coastal Mineral & Dev. Co. No. 1 Winsten, NW cor. sec. 23-7-9e. Tstd. S.W. 2,090 ft.; P.B. 2,027 ft.; tested dry; S.D.; W. O.O.

De Soto Parish

Jal Drlg. Co. No. 10-A Scales, sec. 36-13-12. Set 5½-in. csg. 2,418 ft.

Pet. Heat & Power Co. No. 1 DeSoto Corp., SE cor. SW NW sec. 7-11-11. Drk.
Petroleum Heat & Power Co. No. 1 Kavanaugh, NW SW sec. 7-11-11. Comp.; 105 B.P.D.; ¼-in. ck.; T.D. 2,841 ft.
Pet. Heat & Power Co. No. 1 Taylor, NE cor. NE SE sec. 12-11-12. R.U.

Franklin Parish

Southern Star Pet. Co. No. 2 Grayson, NE cor. NE SE sec. 36-12-6e. R.U.

La Salle Parish

Georgetown Oil Co. No. 1 Baldridge, NW cor. NE NW sec. 11-9-1e. W.O.S. R. 1,512 ft.
Pet. Heat & Power Co. No. 1 Gahavan, Lot 7, Blk. 1, Holmes & Adams Addn., sec. 25-10-1e. Drk.
Pet. Heat & Power Co. No. 1 Russell, Lot 7, NW cor. NW SE sec. 26-10-1e. Set 6-in. csg. 1,518 ft.
Stovall, Tr., No. 4 Russell, SE SE sec. 25-10-1e. 6-in. csg. at T.D. 1,518 ft.; W.O.S.R.
T. & J., Inc. No. 2 Tullos, SE NE sec. 26-10-1e. Set 6-in. csg. 1,514 ft.; T.D. 1,523 ft.

Lincoln Parish

F. H. Brown No. 1 Patton, C N½ SE SW sec. 6-20-4. Drlg. 4,768 ft.
Gulf Oil Corp. No. 2 Patton, SW cor. NW SE sec. 6-20-4. Comp.; 1,394 B.P.D.; T.D. 5,291 ft.; 7-in. csg. 5,251 ft.
Love Bros. No. 1 Patton, SW SE sec. 6-20-4. Comp.; 85 B.P.H.; ½-in. ck.; T.D. 5,309 ft.
Magnolia Pet. Co. No. 2-B Corbin, NW NW sec. 5-20-4. Set 7-in. csg. 5,263 ft.; T.D. 5,264 ft.
E. T. Oakes & Easton No. 1 Griggs, sec. 36-18-1w. Set 5½-in. csg. 6,259 ft.; Schlumberger survey showed sat. 6,-231-40 ft.; prep. test.

Morehouse Parish

W. J. Furlong No. 1 Clark, sec. 10-20-7e. T.D. 6,002 ft.; conditioning hole.

Red River Parish

Arkansas Fuel Co. No. 1 Frankland Realty Co., NW sec. 20-11-9. Cg. 5,990 ft.
Glassell & Whitehurst No. 1 LeLong, NE NW NE sec. 25-12-11. Set 13⅜-in. csg. 250 ft.
Yandell Rogers No. 5 Gaspair, SE SW sec. 27-13-11. S.D. 2,330 ft.

Sabine Parish

Hunter Co. No. 2 Long Bell Lbr. Co., C NE NE sec. 23-7-13. Drlg. 2,060 ft.
W. L. Posey No. 1 Hale, C NE NW sec. 12-7-13. Drlg. sh. 1,430 ft.
Royal O. & G. Co. No. 1 Graham, NE cor. sec. 19-9-13. Comp.; 111 B.P.D.; T.D. 1,699 ft.
Sutton-Zwolle Oil Co. No. 1 Sabine Lbr. Co., SE cor. NW NE sec. 23-7n-14w. Drlg. 700 ft.

Tensas Parish

H. M. Jones No. 2 Chicago Mill & Ld. Co., NE SW sec. 31-12-10e. T.D. 460 ft.; S.D.

Union Parish

Joe Modisett No. 1 Frost Lbr., sec. 14-21-1e. T.D. 7,005 ft.; S.D.

Webster Parish

V. L. Foster No. 2 J. M. Mixon, SE sec. 21-21-10. Set 7-in. csg. 8,298 ft.; T.D. 8,339 ft.; comp.; 5,000,000 ft. gas; 30 bbls. dist. per hr. on ¾-in. ck.; T.D. 8,339 ft.
H. L. Hunt Oil Co. No. 1 Hope, C SW NW sec. 24-21-10. Drlg. 4,150 ft.
Magnolia Pet. Co. No. 1 Crichton Hrs., NE NW sec. 33-21-10. Set 7-in. csg. 8,304 ft.; T.D. 8,332 ft.
Magnolia Pet. Co. No. 7 Marshall, SW SE sec. 21-21-10. Drlg. 7,819 ft.
Magnolia Pet. Co. No. 2 Mixon, sec. 22-21-10. Drlg. 5,843 ft.
Magnolia Pet. Co. No. 1 Sexton Unit, NW SE sec. 32-23-9. Drlg. 4,468 ft.
North American Oil Co. and Root Pet. Co. No. 1 Coyle, NE SW sec. 28-21-10. Drlg. 6,885 ft.
North American Oil Consol. Co. No. 1 Stewart, C SE NE sec. 32-27-10. R.U.
Ohio Oil Co. No. 2 Bodcaw Acct. 4, SW SE NW sec. 24-21-10. S.D. 7,081 ft.; high wtr.
Ohio Oil Co. No. 48 Bodcaw Acct. 2, SE sec. 15-21-10. Drlg. 7,421 ft.
Ohio Oil Co. No. 23 Gray Acct. No. 1, SE sec. 27-21-10. Drlg. 6,453 ft.
Ohio Oil Co. No. 2 Warren Cox, SE sec. 23-21-10. Drlg. 7,523 ft.
A. G. Oliphant No. 2 Banks, C SE NW sec. 34-21-10. Drlg. 3,550 ft.
A. G. Oliphant No. 1 Hodges, NW sec. 34-21-10. Drlg. 5,064 ft.
W. G. Ray No. 1 Stewart, NE cor. sec. 33-21-10. Holloway sd. 5,791-5,804 ft.; comp.; flwg. 35 B.P.H.; 1-in. ck.; T.D. 5,807 ft.
Stanolind O. & G. Co. No. 1 Pardee Co., SW NE sec. 36-21-10. S.D. 2,190 ft.; high wtr.
Union Prod. Co. No. 4 Miller, SE cor. SE sec. 28-21-10. R.U.
Woodley Pet. Co. No. 5-B M. E. Gray, sec. 27-21-10. Drlg. 8,039 ft.

SOUTH LOUISIANA FIELDS

Anse La Butte—St. Martin Parish

Austin B. Taglar No. 4 Begnaud, sec. 113-9s-5e. Drlg. sdy. sh. 1,741 ft.
Austin B. Taglar No. 1 Martin, sec. 71-13s-9e. T.D. 1,750 ft.; salt 5⅛-in. csg. 1,750 ft.; W.O.C.

Bay St. Elaine—Terrebonne Parish

F. J. LeBlanc No. 2 Wurzlow, sec. 17-22s-18e. S.D. 910 ft.
Texas Co. No. 15 State, sec. 20-22s-18e. Top salt 5,704 ft.; T.D. 5,609 ft.; abd.

Bayou Blue—Iberville Parish

Humble O. & R. Co. No. 1 Schwing, sec. 67-9s-11e. Drlg. sd. in sdtrkd. hole 5,695 ft.

Bayou Cocotrix—Terrebonne Parish

Shell Pet. Corp. No. 4 Pelican, sec. 19-17s-15e. 10¾-in. csg. 2,452 ft.; drlg. sh. 8,932 ft.

Bayou De Allemands—St. Charles Parish

Amerada Pet. Corp. No. 1 St. Charles Ld. Co., sec. 38-15s-20e. 10¾-in. csg. 2,698 ft.; top salt 9,255 ft.; T.D. 9,263 ft.; 7-in. csg. 7,200 ft.; Schlumberger shwd. 7¾ ohms, 130 millivolts.

Black Bayou—Calcasieu Parish

Shell Pet. Corp. No. 39 Watkins. T.D. 6,134 ft.; fsg.

Bosco—Acadia Parish

Superior Oil Co.-Pure Oil Co. No. 5 Larcade, sec. 35-8s-3e. T.D. 10,216 ft.; P.B. sdtrkd.; T.D. 9,927 ft.; 9⅝-in. csg. 7,536 ft.; T.D. 10,326 ft.; fsg.

Edgerly—Calcasieu Parish

La. Crusader Oil Co. No. 1 La. Prairie, sec. 21-9s-11w. Drlg. sd. 2,715 ft.

Cameron Meadows—Cameron

Burton-Sutton Oil Co. No. 20 School Ld. sec. 16-14s-13w. T.D. 4,086 ft.; 7-in. csg. 4,055 ft.; I.P. 300 B.P.D.; ¼-in. ck.
Magnolia Pet. Co. No. 21 Cameron Meadows, sec. 21-14s-13w. 13⅜-in. csg. 1,-173 ft.; 9⅝-in. csg. 4,080 ft.; W.O.C. no report.

Chenevville—Rapides Parish

Amerada Pet. Corp. No. 4 Weil, sec. 53-1s-2e. Drlg. sh. 5,040 ft.

Charenton—St. Mary Parish

Pan American Prod. Co. No. 1 Bourdreaux, sec. 21-13s-9e. R.U.
Pan American Prod. Co. No. 1 Eucer, sec. 11-13s-9e. Drlg. sh. 8,678 ft.
Pan American Prod. Co. No. 1-B Eucer, sec. 11-13s-9e. Cored O.S. 1,860-1,908 ft.; I.P. 5 B.P.D.; pmpg.
Pan American Prod. Co. No. 1-A Kern, sec. 21-13s-9e. R.U.
Pan American Prod. Co. No. 1 Simoneaux, sec. 21-13s-9e. Drlg. S.W. sd. 2,671 ft.

Choctaw—Iberville Parish

Louisiana Crusader Oil Co. No. 1 E. B Schwing, sec. 29-8s-11e. Drlg. sd. and shell 8,390 ft.
Standard Oil Co. No. 8 Gay, sec. 52-9s-11e. Drlg. sh. 5,634 ft.

Darrow—Ascension Parish

Kiva Oil Co. No. 1 Duplessis, sec. 69-10s-2w. R.U.
Humble O. & R. Co. No. 1 Rose, sec. 33-10s-2e. 10¾-in. csg. 2,966 ft.; drlg. sdy. sh. 6,744 ft.

Dog Lake—Terrebonne Parish

Texas Co. No. 21 State, sec. 5-22s-16e. Drlg. sdy. sh. 2,285 ft.

Fausse Point—Iberia Parish

Texas Co. No. 4 State, sec. 35-11s-8e, 18⅝-in. csg. 90 ft.; drlg. sh. 5,392 ft.

Four Isle—Terrebonne Parish

Texas Co. No. 9 L.L.&E., sec. 24-21s-16e. T.D. 8,553 ft.; P.B. 3,881 ft.; sdtrk. T.D. 6,943 ft.; cleaned hole to 6,780 ft.; csg. collapsed.

Garden Island—Plaquemines Parish

Texas Co. No. 25 State, sec. 37-23s-33e. Drlg. sd. 5,659 ft.

Gillis—Calcasieu Parish

Union Sulphur Co. No. 2 Mary McIvor, sec. 14-9s-8w. T.D. 7,165 ft.; 5-in. csg. 7,165 ft.; P.B. 7,142 ft.; set cmt. retainer; squeezed off perf.
Union Sulphur Co. No. 6 Kaufman, sec. 13-9s-8w. Cg. sh. 7,341 ft.

Hackberry—Cameron Parish

W. T. Burton No. 3 Lewis, sec. 22-12s-10w. R.U.
W. T. Burton No. 2 Porter Ellender, sec. 27-12s-10w. T.D. 4,640 ft.; perf. csg. 3,-876-3,909 ft.; swbg.
Daryl Davis No. 1 Doiron, sec. 37-12s-10w. S.D. 40 ft.
F. J. LeBlanc No. 1 Doiron, sec. 36-12s-10w. R.U.
Stanolind O. & G. Co. No. 8 Carter & Sweeney, sec. 22-12s-10w. R.U.
Stanolind O. & G. Co. No. 10 Carter & Sweeney, sec. 22-12s-10w. Drk.
Stanolind O. & G. Co. No. 27 Gulf Ld., sec. 22-12s-10w. T.D. 4,075 ft.; perf. csg. 3,082-96 ft.; abd.
Texas Co. No. 3-B State, sec. 12-12s-9w. T.D. 7,695 ft.; P.B.; sdtrkd.; T.D. 7,534 ft.; perf. csg. 7,490-7,520 ft.; tstg.
Union Sulphur Co. No. 1 Doiron, sec. 37-12s-10w. T.D. 4,888 ft.; 7-in. csg. 4,876 ft.; swbg.; showing wash wtr.
Union Sulphur Co. No. 43 Watkins, sec. 24-12s-10w. Cg. sdy. sh. 4,098 ft.
York Oil Field Supply No. 3 Vincent, sec. 28-12s-10w. T.D. 2,947 ft.

Horseshoe Bayou—St. Mary Parish

Texas Co. No. 1 St. Mary Parish Ld. Co., sec. 37-17s-9e. Drive pilling.

Iowa—Jeff Davis Parish

Magnolia No. 13 Walt, sec. 12-9s-7w. T.D. 4,435 ft.; R.U. to pmp.

Lockport-Cameron Parish

Magnolia Pet. Co. No. 35 Miller, sec. 9-10s-9w. T.D. 7,237 ft.; S.D.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1 Teche Sugar Co., sec. 58-13s-8e. Drlg. 9,590 ft.

Jennings—Acadia Parish

W. T. Burton No. 5 Roboria, sec. 42-9s-2w. T.D. 6,597 ft.; rmg.
H. Fostiades et al No. 1 Washington-Opelousas, sec. 41-9s-2w. Drlg. sh. 6,-190 ft.
Gulf Ref. Co. No. 39 Arnaudit, sec. 47-9s-2w. T.D. 4,840 ft.; run csg.
Jolly Pet. Co. No. 2 McFarlain, sec. 41-9s-2w. Drk.; (corrected).
Jolly Pet. Co. No. 5 Jennings-Haywood, sec. 46-9s-2w. T.D. 2,040 ft.; S.D.
Port City Oil Co. No. 21 Jennings-Heywood, sec. 41-9s-2w. Drlg. 650 ft.
Reiter Foster Oil Co. No. 2 Crusel, sec. 42-9s-2w. T.D. 3,908 ft.; P.B. 3,146 ft.; S.D.
Shell Pet. Corp. No. 3 Community, sec. 40-9s-2w. T.D. 7,131 ft.; perf. csg. 7,-085-95 ft.; showed P.L.O.
Stanolind O. & G. Co. No. 19 Houssiere-Latrelle, sec. 47-9s-2w. T.D. 6,448 ft.; rmg.
Superior Oil Co. No. 1 Julis Clement, sec. 46-9s-2w. Drlg. sh. 7,161 ft.
Superior Oil Co. No. 3 Iowa-Jennings, sec. 41-9s-2w. Drlg. sh. 3,912 ft.
Superior Oil Co. No. 5 Jennings-Heywood, sec. 41-9s-2w. Drlg. sh. 6,180 ft.
Superior Oil Co. No. 9 Leckelt, sec. 42-9s-2w. Drlg. sh. 6,353 ft.
Victor Weisse No. 1 Clement, sec. 46-9s-2w. Drlg. sh.&L. 3,788 ft.

Lafitte—Jefferson Parish

Texas Co. No. 8 Rigolet, sec. 29-17s-24e. 13⅜-in. csg. 1,923 ft.; cored O.S. 10,-092-97 ft., 10,123-28 ft.; T.D. 10,285 ft.; 9⅝-in. csg. 10,285 ft.; perf. csg. 10,-070-94 ft.; I.P. 1,769 B.P.D.; ¾-in. ck.
Texas Co. No. 9 Lafitte, sec. 20-17s-24e. Drlg. sh.&L. 8,257 ft.
Texas Co. No. 1 Marrero Land & Investment Co., sec. 20-17s-24e. 13⅜-in. csg. 1,937 ft.; drlg. sh.&L. 8,361 ft.

Lake Hermitage—Plaquemines Parish

Gulf Ref. Co. No. 7 Lafourche, sec. 12-18s-25e. 7-in. csg. 8,074 ft.; rlg. sh. 9,-413 ft.

Lockport—Calcasieu Parish

Magnolia Pet. Co. No. 35 Miller, sec. 9-10s-9w. S.D. 7,237 ft.

Lake Long—Lafourche Parish

Fohs Oil Co. No. 2 State, sec. 65-17s-19e. R.U.
Fohs Oil Co. No. 3 State, sec. 65-17s-19e. 10¾-in. csg. 2,743 ft.; T.D. 9,539 ft.; sd. 9,517-33 ft.; P.B. 9,464 ft.; perf. csg. 9,482-96 ft.; drlg. sh. 10,335 ft.

Leesville—Plaquemines Parish

Texas Co. No. 63 Leesville, sec. 27-12s-22e. Drlg. sdy. L. 2,132 ft.

Lirette—Terrebonne Parish

Humble O. & R. Co. No. 1 Frank Wurzlow, sec. 6-19s-19e. 13⅜-in. csg. 2,796 ft.; cored sd. and sh. show. oil 8,215-25 ft. T.D. 9,027 ft.; run 7-in. csg. 70 ft. lower than discovery well.

New Iberia—Iberia Parish

Wm. Hellis No. 4 Gulf Land, sec. 52-12s-7e. Cg. sh. 4,700 ft.
Wm. Hellis No. 10 Bernard, sec. 54-12s-7e. R.U.
Texas Co. No. 3 Bryant, sec. 25-12s-7e. Drlg. sh. 4,191 ft. in sdtrkd. hole.
Texas Co. No. 1 Burke, sec. 56-12s-8e. T.D. 7,383 ft.; sdtrkd.; drlg. sdy. L. 6,838 ft.

North Crowley—Acadia Parish

Humble O. & R. Co. No. 1 H. J. Habetz, sec. 45-8s-1e. T.D. 8,145 ft.; oil sd.; run 7-in. csg.; I.P. 35 B.P.H.; ¼-in. ck.
Humble O. & R. Co. No. 1 Habetz, sec. 3-9s-1e. T.D. 10,040 ft.; abd.
Humble O. & R. Co. No. 2 Ohlenforst, sec. 34-8s-1e. Spd.

Roanoke—Jeff Davis Parish

Humble O. & R. Co. No. 5 Taylor, sec. 12-9s-4w. Drlg. sh. 7,206 ft.

Sorrento—Ascension Parish

Sorrento Oil Co. No. 1 L. L. Barnard et al, sec. 16-10s-4e. 10¾-in. csg. 1,070 ft.

South Elton—Jeff Davis Parish

Stanolind O. & G. Co.-Amerada Pet. Corp. No. 3-B Calcasieu Natl. Bank, sec. 27-7s-3w. T.D. 9,154 ft.; recmtd. surf. csg.

Starks—Calcasieu Parish

Capital Oil Co. No. 1 Lutcher-Moore, sec. 24-9s-13w. R.U.
Lutcher Moore No. 3 fee, sec. 19-8s-12w. T.D. 4,361 ft.; 6⅝-in. csg. 4,351 ft.; drld. deeper; T.D. 4,367 ft.; swbg.
J. R. Turnbull et al No. 3 Industrial Lbr. Co., sec. 19-9s-12w. Drlg. sh. 1,-649 ft.

Sulphur—Calcasieu Parish

Union Sulphur Co. No. 853 fee, sec. 20-9s-10. T.D. 1,039 ft.; run 10¾-in. csg.; drlg. sh. 3,665 ft.
Union Sulphur Co. No. 852 fee, sec. 20-9s-10w. Drlg. sdy. L. in sdtrkd. hole 4,653 ft.
Union Sulphur Co. No. 855 fee, sec. 20-9s-10w. Drlg. sdy. sh. 3,665 ft.

Tepetate-Acadia Parish

Continental Oil Co. No. 4-D Homeseeker Dev. Co., sec. 34. T.D. 8,313 ft.; run screen and lnr.

Valentine—Lafourche Parish

Pan American Prod. Co. No. 15 Harang, sec. 8-17s-20e. 16-in. 210 ft.; T.D. 7,085 ft.; P.B. 3,343 ft.; T.D. 6,138 ft.; run 7-in. csg.
Pan American Prod. Co. No. 15 Harang, sec. 5-17s-20e. Spd.
Pan American Prod. Co. No. 16 Harang, sec. 7-17s-20e. Drk.

Venice—Plaquemines Parish

Tide Water Oil Co. No. 5 Manhattan Fruit Co., sec. 26-26s-30e. Drlg. 2,312 ft.

Vinton—Calcasieu Parish

Katina Oil Co. No. 2 Vincent, sec. 34-10s-12w. T.D. 4,303 ft.; P.B. 3,227 ft.; swbg oil and S.W.; S.D.
J. V. Redick No. 1 Vincent, sec. 34-10s-12w. R.U.
Superior Oil Co. No. 2 Gray, sec. 4-11s-12w. Drlg. 2,626 ft.
Superior Oil Co. No. 2 Levy, sec. 4-11s-12w. T.D. 5,790 ft.; P.B. 2,000 ft.
Sutton-Burton No. 1 Calcasieu Natl. Bk., sec. 3-11s-12w. T.D. 4,500 ft.; S.D.

Villa Platte—Evangeline Parish

Continental Oil Co. No. 1 La. Ld. Improvement Co., sec. 46-3s-2e. 18⅝-in. csg. 247 ft.; drlg. L. 7,244 ft.

Welsh—Jeff Davis Parish

Stanolind O. & G. Co. No. 1 W. B. Conover, sec. 20-9s-5w. Drk.

White Castle—Iberville Parish

T. D. Humphray No. 1 E. B. Adams, sec. 1-11s-12e. S.D. 6,067 ft.; P.B. and sdrk. T.D. 8,794 ft.; P.B. 8,694 ft.; drld. to 8,810 ft.; P.B. 8,712 ft.
Shell Pet. Corp. No. 11 Wilbert. T.D. 6,900 ft.; O.S.; rmg.

S. LOUISIANA WILDCATS

Acadia Parish

H. E. Dalton No. 1 Setting, sec. 17-7s-1w. T.D. 5,106 ft.; P.B. to approx. 500 ft.; T.D. 3,925 ft.; D.S. stuck.
Gulf Oil Corp. No. 1 Euclia Broussard, sec. 49-10s-2w. T.D. 9,678 ft.; 7-in. csg. 9,672 ft.; drlg. sh. 9,724 ft.

Calcasieu Parish

Republic Prod. Co. No. 1 Sabine Tram. Co., sec. 25-18s-14w. 10¾-in. csg. 1,981 ft. T.D. 9,620 ft.; hole clean; S.D.; high wtr.
Union Sulphur Co. No. 1 American Oil & Sulphur Co., sec. 16-10s-10w. T.D. 8,-002 ft.; taking side wall cores.
Wheeler Oil Corp. No. 2 Sch. Ld., sec. 16-9s-7w. 15½-in. csg. 46 ft.; W.O.C.

Cameron Parish

Humble O. & R. Co. No. 1 Miami Corp., sec. 8-14s-5w. 20-in. pipe set 188 ft.; 9⅝-in. csg. 7,100 ft.; T.D. 10,177 ft.; D.S. stuck; P.B. 8,155 ft.; sdtrkd.; drlg. sh. 8,180 ft.

Cameron Parish—Gulf of Mexico

Superior Oil Prod. Co. et al No. 1 State-Gulf of Mexico, 3,800 ft. W, 6,200 ft. S of SE cor. of irregular sec. 4-15s-8w. 10¾-in. csg. 1,157 ft.; T.D. 7,166 ft.; 7⅝-in. csg. 7,166 ft.; drlg. hd. sd. 8,-255 ft.

East Baton Rouge Parish

Cavalier Oil Co. No. 1 Elliott, sec. 3-9s-2e. T.D. 7,678 ft.; S.D.

Evangeline Parish

Schlicher Prod. Co. No. 2 Ledenois, sec. 35-3s-1w. 10¾-in. csg. 250 ft.; S.D.

Iberia Parish

Texas Co. No. 2-B Vermilion Bay, sec. 20-16s-5e. T.D. 9,101 ft.; P.B. and sdtrkd. at 5,788 ft.; drlg. sh. 6,503 ft.

Jefferson Parish

Triangle Oil Co. No. 1 Conroe, sec. 125-12s-11e. T.D. 3,752 ft.; D.S. stuck.

Jefferson Davis Parish

Continental Oil Co. No. 1 Fave, sec. 31-10s-3w. 10¾-in. csg. 1,999 ft.; drlg. sh. 10,487 ft.
Humble O. & R. Co. No. 1 T. S. Stegall, sec. 20-9s-5w. 13⅜-in. csg. 2,032 ft.; T.D. 9,010 ft.; abd.
Union Sulphur Co. No. 1 Calcasieu National Bank, sec. 12-9s-6w. T.D. 8,524 ft.; 7-in. csg. cmtd. 8,524 ft.; P.B. T.D. 8,310 ft.; tstd. S.W. through perforations 8,292-95 ft.; perf. csg. 8,276-81 ft.; I.P. 46 bbls. distl. per day through 29/64-in. ck. on tbg. and 12/64-in. bttm-hole ck.

Lafourche Parish

Amerada Pet. Corp. No. 1 South Coast Corp., sec. 34-15s-19e. T.D. 8,745 ft.; 9⅝-in. csg. 7,636 ft.; cored O.S. 10,209-14 ft.; cored 10,219-24 ft.; recovered 3 ft. O.S., 2 ft. S.W. sd.; T.D. 10,314 ft.; 7-in. csg. 9,003 ft.; will run 5-in. csg. to bttm.
Gulf Oil Corp. No. 3 State (P.P.), sec. 35-23-21. T.D. 8,728 ft.; salt; P.B. to perf. csg.; perf. csg.; make D.S.T.

St. Bernard Parish

Gulf Oil Corp. No. 2 State Lake Borgne, sec. 38-14s-15e. 13⅜-in. csg. 303 ft.; T.D. 3,461 ft.; 7-in. csg. 3,461 ft.; drlg. sh. 5,017 ft.

St. Martin Parish

Shell Pet. Corp. No. 1 Fredericks, sec. 38-8s-5e. T.D. 9,005 ft.; abd.
Shell Pet. Corp. No. 1 Unit, sec. 11-14s-12e. Drlg. sh. 5,447 ft.
Texas Co. No. 4 State Lake Mongoulois, sec. 14-10s-9e. Drlg. sdy. sh. 2,928 ft.

St. Mary Parish

Shell Pet. Corp. No. 1 Barbour, sec. 21-15s-12e. T.D. 10,417 ft.; run Schlumberger survey.

Terrebonne Parish

Fohs Oil Co. No. 1 Buckley & Bourg, sec. 77-19s-17e. Bldg. drk.

TEXAS

Week Ending January 8

GULF COAST FIELDS

Lockridge—Brazoria County

Gulf Oil Corp. No. 3 Gibson, J. W. Hall Sur. Drk.
Gulf Ref. Co. No. 3 Reiss, J. W. Hall Sur. T.D. 6,368 ft.; 7-in. csg. 6,368 ft.; S.G. &S.W.; P.B.
Gulf Oil Corp. No. 1 Great Southern, E. D. Robertson Sur. 9⅝-in. csg. 7,145 ft.; T.D. 9,227 ft.; fsg.; P.B. and sdtrkd.; T.D. 9,684 ft.; 7-in. csg. 9,684 ft.; abd.
Shell Pet. Corp. No. 4-B Ramsey, J. W. Hall Sur. R.U.

Hastings Field—Brazoria County

Humble O. & R. Co. No. 7-D W. F. Beers, C Lot 63, Perry and Austin Sur. Drlg. sd. 4,798 ft.
Humble O. & R. Co. No. 5 McDeed, H. T.&B. Sur. No. 27. Drlg. sh. 3,231 ft.
Senisa Oil Co. et al No. 1 B. Steiner & Blummer, H.T.&B. Sur. No. 28. Drlg. 1,350 ft.
Stanolind O. & G. Co. No. 7 T. C. Edwards, Wm. Henry Sur. R.U.
Stanolind O. & G. Co. No. 1 Geo. Liverman, H.T.&B. Sur. No. 28. R.U.
Sam E. Wilson No. 1 E. D. Mills, I.& G.N. Sur. No. 23. Drlg. 2,710 ft.

Old Ocean—Brazoria County

Harrison & Abercrombie No. 2 Armstrong, Polly & Chance Sur. T.D. 10,856 ft.; 7-in. csg. 10,824 ft.

West Columbia—Brazoria County

Texas Co.-Sterling O. & R. Co. No. 6 Phillips, G. Tennille Sur. Spd.
Texas Co. No. 1 T. Robinson, George Tennille Sur. Drlg. sh. 2,465 ft.
Texas Co. No. 3 Smith, G. Tennille Sur. Drlg. sh. 4,930 ft.

Calhoun—Heyser—Victoria County

Blanco Oil Co. and Buchanan No. 4 C. S. Dunnwoody, A. Sisneros Sur. Cg. 5,430 ft.
Blanco Oil Co.-Buchanan No. 6 C. Dunwoody, A. Sisneros Sur. Making D.S. T. 5,486-98 ft.
George Echols No. 7 W. H. Bennett, J. E. Galban Sur. Cg. gas sd. 5,721 ft.
Gulf Oil Corp. No. 1 Bonner, J. E. Galban Sur. T.D. 5,500 ft.; tstg.
Gulf Oil Corp. No. 2 L. P. Schultz, J. E. Galban Sur. Bldg. drk.
Gulf Ref. Co. No. 2-B Traylor, J. E. Galban Sur. T.D. 5,478 ft.; making D.S.T.
Humble O. & R. Co.-Plymouth Oil Co. No. 1 Vandeberg, J. Galban Sur. T.D. 6,033 ft.; tstg.
Humble O. & R. Co.-Plymouth Oil Co. No. 16 E. H. Welder, J. M. Rios Sur. Drlg. sh. 1,602 ft.
Humble O. & R. Co. No. 18-B P. H. Welder, A. Sisneros Sur. R.U.
Sinclair Prairie Oil Co. No. 8 W. H. Bennett, A. Sisneros Sur. R.U.
Sun Oil Co. No. 5 Coffey, J. E. Galban Sur. Drlg. sh. 1,830 ft.

Seabreeze—Chambers County

Sun Oil Co. No. 1 Seabreeze Ld. Co., H.T.&B. Sur. 102. R.U.

Hitchcock—Galveston County

N. W. Hunter No. 2 Stewart Title Guaranty Co., J. D. Moore Sur. T.D. 5,702 ft.; abd.

Silsbee—Hardin County

Republic Prod. Co.-Houston Oil Co. No. 1 Frazier, G. W. Brooks Sur. T.D. 6,910 ft.; 7-in. csg. 6,905 ft.; tested gas; killed.
Republic Prod. Co.-Houston Oil Co. No. 1 Howell, Geo. W. Brooks Sur. Drlg. sh. 6,530 ft.

Clinton—Harris County

Stanolind O. & G. Co. No. 1 Moody, Reel & Trobough Sur. T.D. 3,700 ft.; 5¾-in. csg. 3,669 ft.; W.O.C.

Friendswood—Harris County

Humble O. & R. Co. No. 4 Beamer, T. Choate Sur. T.D. 6,050 ft.; tstg.
Humble O. & R. Co. No. 1 Clover, T. Choate Sur. T.D. 6,050 ft.; run 7-in. csg.
Humble O. & R. Co. No. 1 J. L. Jones and E. A. Gray, Perry and Austin Sur. Drk.
Humble O. & R. Co. No. 1 Kiesling, T. Choate Sur. R.U.
Texas Co. No. 1 Pierce, W. K. Smith Sur. T.D. 3,847 ft.; gas sd.

North Cheek—Jefferson County

Magnolia Pet. Co. No. 3-A Phelan, S. Stevers Sur. Spd.

Hardin—Liberty County

Atlantic Ref. Co. No. 1 Wm. McMurtry, H. B. Johnson Sur. Drlg. L. 6,000 ft.
Atlantic Ref. Co. No. 1 Murphy, H. B. Johnson Sur. 10¾-in. csg. 1,981 ft.; drlg. sh. 6,828 ft.
Jack Frazier No. 1 W. McMurtry, H. B. Johnson Sur. R.U.
Halliburton Oil Prod. Co. No. 1 Hanchey, H. B. Johnson Sur. R.U.
Humble O. & R. Co. No. 2 Myrtle Chambers, A. B. Hardin Sur. T.D. 7,580 ft.; run csg.
Strake Pet. Corp. No. 4 Finley, A. B. Hardin Sur. T.D. 8,010 ft.; abd.
Sun Oil Co. No. 1 Cessna, A. B. Hardin Sur. T.D. 7,544 ft.; W.O.C.
E. W. Wickes No. 1 Tullos, H. B. Johnson Sur. Drlg. sh. 3,027 ft.

South Cail—Newton County

Houston Oil Co. No. 3 Peavy Moore Lbr. Co., sec. 42, H.&T.C. Sur. Spd.
Houston Oil Co.-Republic Prod. Co. No. 3 Sabine Tram, H.&T.C. Sur., sec. 37. Abd. loc.

Bay City—Matagorda County

Hamman Expln. Co. No. 2 Thompson, E. Hall Sur. R.U.
Pan American Prod. Co. No. 1 Richers, I.&G.N. Sur. X-3. Spd.

Buckeye—Matagorda County

United North & South Development Co. No. 1 G.B.M., Cotton Lge. 7-in. csg. 8,667 ft.; T.D. 10,500 ft.; hole cleaned; W.O.O.; P.B. to 7,300 ft. to sdtrk.

Palacios—Matagorda County

Atlantic Ref. Co. & McCarthy No. 3 Foley Ld. Co., L. Goodwin Sur. Drlg. sh. 6,312 ft.
Sun Oil Co. No. 1 Bay Shore Farms, Lewis Goodwin Sur. T.D. 11,327 ft.; 7-in. csg. 11,300 ft.; perf. csg. 9,800-25 ft.; squeezed cmt. behind csg.; perf. csg. 9,245-75 ft.; well blew out, caught fire; flwg. oil, gas and some S.W.

Orange—Orange County

Gulf Oil Corp. No. 1 Orange National Bk., Wm. Dyson Sur. R.U.
Glenn H. McCarthy No. 2 Brown, S. M. Luce Sur. Drlg. sh. 1,690 ft.
Union Prod. Co. No. 2 Lutcher-Moore, Dryson Sur. Drlg. sh. 4,037 ft.

Segno—Polk County

Gulf Oil Corp. No. 2 Ragan, I.&G.N. Sur. 15. Cg. 5,097 ft.
Humble O. & R. Co. No. 7-B Kirby Lbr. Co., P. Garcia Sur. T.D. 5,195 ft.; W. O.C.

Spurger—Tyler County

Republic Prod. Co. No. 7 Hurd, N. Hurd Sur. Drlg. sh. 2,100 ft.

Keeran Field—Victoria

Union Oil Co. No. 8 Keeran Est., M. De-Leon Sur. T.D. 6,512 ft.; P.B. 5,550 ft.; perf. csg.

GULF COAST WILDCATS

Brazoria County

Pure Oil Co. No. 1 Smith, S. F. Austin Sur. S.D. 7,710 ft.
Texas Co. No. 4 Freeport Sulphur Co., C. Arriola Sur. 10-in. csg. 1,214 ft.; T.D. 3,900 ft.; P.B. 2,564 ft.; sdtrkd.; drlg. sd.&L. 3,000 ft.

Chambers County

Standard Oil Co. of Texas and California Oil Co. No. 1 State Galveston Bay. Prep. to spd.

Colorado County

Coyle-Concord No. 1 Hancock-Broussard, Hill Duffner Sur. R.U.

Fort Bend County

Medford and Burke No. 1 M. T. Wood, S. M. Stevens Sur. Cg. sd.&sh. 5,978 ft.

Grimes County

Hubert Holt No. 1 Greer et al, Patrick B. O'Connor Sur. R.U.

Harris County

Amerada Pet. Corp.-Stanolind O. & G. Co. No. 1 Mills, A. Larson Sur. T.D. 6,863 ft.; S.W. sd.; rng. csg.
W. S. Howell No. 1 Root, A. McCormick Sur. Drlg. 250 ft.
Stanolind O. & G. Co. No. 2 Warren Minerals, Walker Wade Sur. T.D. 7,481 ft.; abd.
Texas Gulf Prod. Co. No. 1 Rath, W. C. Sevey Sur. 10¾-in. csg. 1,483 ft.; T.D. 7,698 ft.; abd.

Jackson County

Sam G. Harrison et al No. 1 H. A. Meyers, O. York Sur. 10¾-in. csg. 530 ft.; T.D. 5,703 ft.; tstd. S.W. on D.S. test 5,527-44 ft.; T.D. 6,013 ft.; abd.
Magnolia Pet. Co. No. 1 West Ranch, R. Musquez Sur. T.D. 2,515 ft.; drlg. plg.

Jefferson County

I. E. Harwell No. 1 State, Gulf of Mexico. R.U.
Glenn McCarthy No. 1 J. E. Broussard, C. Hillbrand Sur. T.D. 7,732 ft.; recvd. 29 thribbles of oil, 4 thribbles of S.W. 7-in. csg. on bttm.; perf. csg. 7,730-32 ft.; rec. 1,750 ft. oil, 250 ft. S.W.; squeezed off perfs.; W.O.C.

Matagorda County

Sun Oil Co. No. 1 Fred Robbins, C. H. Vandeveer Sur. Drlg. sh. 8,666 ft.

Trinity County

J. R. Bunn No. 1 Rock-Creek Lbr. Co., John Crew Sur. Drlg. 1,037 ft.; no report.
S. T. Walker et al No. 1 First State Bk. 10¾-in. csg. 150 ft.; no report.

Tyler County

C. E. Gates No. 2 I. O. Jackson, J. W. Abbey Sur. R.U.
Navarro Oil Co. No. 1 Wm. Rice, sec. 11, B.B.B.&C. Sur. T.D. 5,189 ft.; S.D.

Waller County

C. W. Markel et al No. 1 Hall, B. B. Guerrgnd Sur. No. 261. R.U.
Stanolind O. & G. Co. No. 1 Security Trust Co., H.&T.C. Sur. T.D. 7,526 ft.; 7-in. csg. 7,526 ft.; perf. csg. 7,430-38 ft.; rec. S.W.

Wharton County

Pierce Est., Inc. No. 1 Pierce Est., I.&G.N. Sur. No. 7. Drlg. 7,100 ft.; cd. sd.; oil show 6,626-33 ft.
Strake Pet. Co. No. 1 Strunck, L. P. Jennings Sur. T.D. 8,000 ft.; W.O.O.

S. W. TEXAS WILDCATS

Atascosa County

L. W. Steiren No. 1 Crawford, 4 mi. W of Anchorage. S.D. 3,872 ft.

Bastrop County

J. W. Bibb No. 1 Lentz, F. Wilkenson Sur Top Austin Chalk with odor of oil 2,530 ft.; T.D. 2,514 ft.; (cor.); last swb.
Southern Cross Oil Co. No. 1 Smith, James B. Bialock Sur. S.D. 1,690 ft.

Bexar County

R. W. Fair No. 1 San Antonio Subd., J. H. Pickens Sur. 10-in. csg. 40 ft.
Hikok & Reynolds No. 1 Eivert, Thomas York Sur. S.D. 435 ft.
Chas. Persyn No. 1 fee, Wm. Lindsey Sur. R.U.

Caldwell County

Mac-Wag-Tree Oil Co. No. 1 Roberts, W. House Sur. Drlg. 2,256 ft.

Cameron County

Saxet Prod. Co. No. 1 Port Isabel Irrig. Co. Sur. 30. Drk.

Dewitt County

F. A. Hines No. 1 Boothe, Jas. Swindel Sur. S.D. 141 ft.
D. M. Richardson No. 1 McCurdy, John C. Hunt Sur. Drk.

Dimmitt County

Teas & Maryland Corp. No. 1 McKnight, Blk. 13, sec. 23. Base of Austin Chalk 5,201 ft.; drlg. sdy. sh. 5,760 ft.

Duval County

Circle Oil Co. et al No. 1 Southland Life Ins. Co., Santos Flores Gr. No. 25. Drlg. sh.&sd. 3,300 ft.
Gillespie & Sons No. 1 Hamilton, J. Poitevent Sur. No. 85. Drk.
Karney Gravis No. 1 Frederick, J. H. Gibson Sur. T.D. 1,056 ft.; 5½-in. csg. 1,049 ft.
James Hougen No. 1 Patton, Sur. No. 148. Drlg. sh. 4,813 ft.
Magnolia Pet. Co. No. 1 Duval County Ranch Co., G.B.&N.C.R.R. Sur. No. 61. Drlg. sh. 3,163 ft.
Magnolia Pet. Co. No. 1 A. Lopez, M. Lopez Sur. No. 82. Drlg. sh. 4,710 ft.

Edwards County

Amon G. Carter No. 1 Sweeten, SE¼, Blk. 2, Sur. 49. T.D. 5,111 ft.; 9-in. csg. 5,030 ft.; S.D. 5,180 ft.
Dan Auld No. 1 Henderson, sec. 46, Blk. E. Drlg. L. 2,700 ft.; 7-in. csg. 1,865 ft.
Frank Garvis No. 1 Megerle, Joseph
Frank Gravis No. 1 Megerle, Joseph
C. V. Lyman No. 1 Brown, Blk. 3. O.W. D.D.; T.D. 3,001 ft.; cleaning out hole.

Frio County

Pagenkopf & Jamieson No. 1 Houston Est., 2,254-ac. tr., J. Figuerroa Sur. S.O. 2,610-03 ft.; set csg. to test 7-in. at 2,480 ft.; swbg.; S.O.&G. and wash wtr.; T.D. 2,651 ft.; set csg.; P.B. 2,607 ft.; pmpg. 30 bbls. fluid per day, 60 per cent oil; fluid decreasing.

Goliad County

Standard Oil Co. of Texas No. 1 Williams, Mieajah Williams Sur. 10¾-in. csg. 436 ft.; drlg. sh. 4,265 ft.
Ruai Swiger No. 1-B Wood, J. Shearn Sur. T.D. 5,048 ft.; S.W. sd.; oil sd. 5,044-48 ft.; perf. csg. 5,008-25 ft.; swbd. S.W.; set retainer 5,000 ft.; squeezed off perf.; reperf. csg. 5,009-14 ft.; swbg some oil; swbd. mud-cut oil; S.D.; W.O.O.

Guadalupe County

F. H. Gallagher No. 1 Howell, J. Darst Sur. No. 10. T.D. 3,342 ft.; abd.
Kreiger & Douglass No. 1 Oliver, R. Smith Sur. S.D. 1,367 ft.
Pegg Bros. No. 1 Rumph, J. H. Burnham Sur. Drlg. 2,850 ft.
Henry W. Whitehall, Tr., No. 1 Rosenbrock, Vincente Duran Sur. Drk.

Hidalgo County

Atlantic Ref. Co. No. 1 American Rio Grande. 7-in. csg. 8,505 ft.; T.D. 9,104 ft.; 5-in. csg. on bttm.; perf. csg. 9,008-15 ft.; slight gas show.
V. & B. Oil Co. No. 1 Waite, Tr. 382, Los Jidos Gr. T.D. 6,425 ft.; abd.

Jim Wells County

H. M. Hill et al No. 1 Kuether, Lots 70 and 75, sec. 52, Haldeman Subd. Drlg. sh. 3,344 ft.
H. H. Howell et al No. 1 Goldapp, Jose Maria Garcia Sur. R.U.
Howell et al No. 1 Talbot, 181-ac. tr., Lavaca Gr. T.D. 6,012 ft.; P.B. 5,179 gas, some oil; reperf. csg. 3,317-22 ft.; swbg.; showing S.W.; squeezed off perf. 3,600-07 ft.; tstd. S.W.; S.D.
Pan American Prod. Co.-Southern Minerals Corp. No. 1 Hawkins, San Diego De Abajo Gr. 10-in. csg. 525 ft.; drlg. sh. 3,530 ft.

Karnes County

DeGraffe & Reele No. 1 Cochran, Daniel B. McConnell Sur. T.D. 1,401 ft.

Kleberg County

Cinco Oil Co. No. 1 Killam, Lot 8, Blk. 53, Kleberg Town & Imp. Co. Subd. Drlg. sh. 1,620 ft.
Magnolia Pet. Co. No. 1 Dietz, Gabriel Trevino Sur. 13¾-in. csg. 1,220 ft.; drlg. sh. 5,418 ft.

LaSalle County

Ralph B. Reed No. 1 Yeager, Blk. 7, Sec. 8, Wallace Subd., Yeager ranch. S.D. 1,020 ft.

Lee County

Jas. E. Pederson No. 1 Turner, David Hudson Sur. S.O.&G. 6,140-80 ft.; sdtrkd. at 4,600 ft. and drld. to 6,132 ft.; S.O.&G.; set csg. 6,021 ft.; acdzg. with 20-bbl. load; when opened well flwd. 20-bbl. head and went dead; swbd. oil and wtr.; acd.; pulling tbg. to rework and test; S.D.
Eleoussa Oil Co. No. 1 Sanders, J. Vin Roeder Sur. S.D. 3,995 ft.

Live Oak County

James Chew No. 1 Alma McNeil, Alexander Parks Sur. Drlg. sh. 3,021 ft.
C. Hannah No. 1 Wedding, B. Haughney Sur. Core. sd. 1,968 ft.
Edwin M. Jones No. 1 George West, Samuel Baird Sur. Abd. 3,120 ft.
Loma Oil Co. No. 1 Pfluger, J. Turner Sur. T.D. 1,413 ft.; abd.
Loma Oil Co. No. 1 Striddle. R.U.
Ray L. Martin No. 1 Adams, J. Buchannan Sur. Drlg. sh. 178 ft.; no report.
Ranco Oil Corp. No. 1 Cook Ranch sec. 3, J. Poitevent Sur. S.D. 3,900 ft.
V. G. Schimmel No. 1 West, sec. 59, Haas Sur. R.U.

McMullen County

Coyle & Bedwell No. 1 Two Rivers Rnch. Co., sec. 60. S.D. 60 ft.
Duncan Drlg. Co. No. 1 Martin Henry, sec. 6. S.D. 707 ft.
Harvey & Henderson No. 1 Nichols, Thomas Henry Sur. R.U.
Mills Bennett Prod. Co. No. 2 Nueces Ld. & Cattle Co., Sur. No. 234. Drlg. sh. 1,130 ft.
Richardson & McCarthy No. 2 Martin, Sur. No. 7. S.D. 525 ft.

Medina County

M. L. Walker No. 1 Riff, Hans Sur. No. 43. S.D. 920 ft.

Nueces County

L. A. Douglas No. 1 Charles McKenzie, Sur. 419. T.D. 5,913 ft.; oil sd.; 7-in. csg. 5,813 ft.; perf. csg. 5,812-13 ft.; flwd. 360 bbls. P.L.O. per day; ⅜-in. ck.
Richardson Pet. Co. No. 1 Chapman, sec. 43, Laureles Farm Tr. No. 43. D.S.T. failed; cg. ahead.
Southern Minerals Corp. No. 1 Walker, R. Garcia Sur. 10¾-in. csg. 1,016 ft.; T.D. 6,400 ft.; abd.
Union Prod. Co. No. 1 Simmons, 1,000-ac. tr., Agua Dulce Gr. T.D. 7,935 ft.; S.D. for repairs.

Refugio County

Continental Oil Co. No. 1 Scott Hrs., Dona A. Reogas Sur. R.U.
Hogan Oil Co. No. 1 Kelley, M. & A. Roache Sur. T.D. 6,437 ft.; P.B. 6,002 ft.; squeezed off perf. 5,995-6,002 ft. W.O.C.

San Patricio County

A. L. Bob No. 2 Green, T. T. Williamson Sur. Drlg. sh. 6,573 ft.
Conroe Drlg. Co. No. 1 J. R. Daugherty, Jas. McGloin Sur. T.D. 1,110 ft.; S.D.
Plymouth Oil Co. No. 1 Brigham, Geo. H. Paul Subd. Drlg. sh. 3,615 ft.
F. B. Schwab No. 1 Smith, Juan Hart & Sons Sur. Drlg. sh. 3,775 ft.

Starr County

Collins No. 1 Guerra, Sh. 6, San Jose Gr. T.D. 6,176 ft.; 7-in. csg. 6,170 ft.; T.D. 7,009 ft.; abd.
Dodd Tr. No. 1 Wardner, Vela Sur., Porc. 84. S.D. 1,265 ft.
W. W. Ely No. 1 M. G. Gonzales, Portion 70. Run csg. to test; cd. oil sd. 751 ft.; cd. gas sd. 1,010-20 ft.
Sioux Oil Co. No. 6 Ricaby, Porc. 83. T.D. 1,751 ft.; well blew out after being abd.; flwg. gas and mud.
Transwestern Oil Co. and Davenport No. 3 Slick, sec. 527. T.D. 6,862 ft.; rec. all but 75 ft. pipe; S.D.

Travis County

C. A. Montgomery No. 1 Lundgren, Lemuel Kimbro Sur. Drlg. 850 ft.

Victoria County

W. V. Bowles No. 2 Robertson, T. C. Burnham Sur. R.U.
Geo. Echols No. 1 Dunseth, Frances Perez Sur. Drlg. sh. 5,330 ft.

Webb County

Boysen & Jones No. 1 Watkins, San Casimero Gr. R.U.
Bridwell Oil Co. No. 1 Billings, Sur. 36. 10-in. csg. 40 ft.; cd. wtr. sd. 1,908-15 ft.
Lemp Oil Co. No. 1 Clark, 500-ac. tr., Porc. 33. S.D. 1,865 ft.
J. R. B. Moore No. 1 Garcia-Villareal, Blk. 8, S.M.&S. Sur. T.D. 1,950 ft.; tstg.; dry gas well.
Nessly et al No. 3 A. M. Bruni, C.&M. R.R. Sur. 449. Oil sd. 1,803-07 ft.; T.D. 1,813 ft.; comp. for dry gas well.

Willacy County

Magnolia Pet. Co. No. 1 Armendaiz, San Juan DeCarricitos Gr., Sh. 4. Drlg. sh. 7,520 ft.

Wilson County

Pattico Oil Co. No. 1 Keller, Karnes Co. Sch. Ld. Sur. S.D. 1,235 ft.

Zapata County

Henry Brown No. 1 Juan Gutierrez, Charco De La Indian Gr. Drlg. 713 ft.
Ray L. Martin No. 2 Vela, Sh. 4, E. L.

Grullo Gr. 10-in. csg. 100 ft.; S.D.; 220 ft.

S. W. TEXAS PROVEN

Batesville—Zavalla County

Wilcox O. & G. Co. No. 2 Gillam, G.W.T. &P.R.R. Sur. T.D. 3,977 ft.; P.B. 3,958 ft.; treated with acid; swbg. sulfur wtr.; P.B. 3,958 ft.; perf. csg.

EAST TEXAS

(Border Counties)

Cass County

Union Prod. Co. No. 3 Bangus Unit, Tromwell Sur. Comp.; 181 B.P.D. on 11/64-in. ck.; T.D. 6,044 ft.
Union Prod. Co. No. 5 Bangus Unit, Tromwell Sur. Drlg. 200 ft.

Bowie County

V. A. Hughes & Co. No. 1 Lysted, Wm. Bateman Sur. S.D. 1,913 ft.
Union Prod. Co. No. 3 Bangus Unit, Tromwell Sur. T.D. 6,044 ft.; drlg. plug.

Harrison County

Ark.-La. Gas Co. No. 1 C. M. Abney, E. Little Sur. T.D. 4,800 ft.; blew out gas and bridged; shutting in.

Marion County—Rodessa

Arkansas-Louisiana Gas Co. No. 1 Holland, Hanks Sur. Drk.
Geo. Barham No. 2 Brantley, Bennington Sur. R.U.
Fohs Oil Co. No. 1 Henderson, Ewing Sur. Drlg. 4,483 ft.
Fohs Oil Co. No. 1 Kemper, Bennington Sur. Drlg. 5,732 ft.
Gulf Oil Corp. No. 1 Beard, Bennington Sur. Drlg. 3,055 ft.
Gulf Ref. Co. No. 1 Beal, Coy Sur. Drlg. 2,845 ft.
Heyser, Heard and Clardy No. 1-B Henderson, U. Ewing Sur. Drk.
Heyser-Heard & Clardy No. 2 Henderson, R. Bennington Sur. Set 7-in. csg. 6,020 ft.; T.D. 6,048 ft.
Phillips Pet. Co. No. 1 Pruitt-Lockett, U. Ewing Sur. Set 16-in. csg. 225 ft.; W.O.C.
Shell Pet. Corp. No. 2 Cooke, Bennington Sur. Drlg. sh. 2,714 ft.
Shell Pet. Corp. No. 1-B Henderson, Bennington Sur. Comp.; 62 B.P.D.; ⅛-in. ck.; T.D. 6,023 ft.
Shell Pet. Corp. No. 2-A Henderson, Bennington Sur. Drlg. 3,125 ft.

Panola County

C. K. Crews No. 1 Graves, McGowan Sur. Drlg. 1,935 ft.
Magnolia Pet. Co. No. 2 E. A. Hull, Thos. Applewhite Sur. T.D. 8,717 ft.; P.B. 5,950 ft.; perf. 5,906-36 ft.

WEST TEXAS WILDCATS

Andrews County

Black No. 1 O. B. Holt, P.S.L. Sur. T.A. 1,795 ft.
Drilling & Exploration Co. No. 1 Thornberry, P.S.L. Sur. M.I.M.
M. S. Forgeron et al No. 1 Lockhart & Brown, C NE¼ sec. 20, Blk. A-41, P.S.L. Sur. S.D. 179 ft.
Gulf Oil Corp. No. 1 State, sec. 8, Blk. 14. Sulfur wtr. in hole; P.B.
Honolulu Oil Co. No. 1-6 Parker, sec. 6 Blk. A-66, P.S.L. Sur. Drlg. 4,622 ft.
Seaboard Oil Corp. No. 1 Munger-Nix, sec. 1, Blk. A-4, P.S.L. Sur. S.D. 605 ft.
H. C. Wheeler No. 1 T. M. Gardner, sec. 15, Blk. A-35, P.S.L. Sur. Cellar and pits.

Bailey County

Duffey & Etz No. 1 Enochs, Tract 66, League 182, Floyd Co. School Lands Sur. S.D.O. 4,160 ft.

Borden County

Continental Oil Co. No. 1-A Clayton, sec. 27, Blk. 32, Twp. 4n, T.&P. Sur. Drlg. 3,491 ft.

Brewster County

F. C. Dodson No. 1 Texas American Synd., sec. 66, Blk. 10, G.H.&S.A. Sur. Drlg. 6,567 ft.
Toney Hess No. 1 Decie, C.T.R.R. Sur. S.D. 925 ft.
Storey No. 1 Wilson, sec. 3, Blk. 212, T.&N.O. Sur. S.D. 2,545 ft.

Cochran County

Devonian Oil Co. No. 1 Duggan, Oldham Co. Sch. Ld. Sur. S.D. 5,044 ft.
J. R. Meeker et al No. 1 Wright, Mills City Sch. Ld. Drlg. 4,730 ft.
P. N. Wiggins et al No. 1 Dean, NE cor. League 58, Martin Co. School Lands. Drlg. 5,035 ft.; S.D. 4,826 ft.

Concho County

Sam Murray No. 1 R. G. Armor, sec. 105, T.&N.O. Sur. S.D. 70 ft.

Coke County

Barnett Pet. Co. No. 1 J. R. Mims, sec. 39, Blk. W, T.&P. Sur. Drlg. 1,600 ft.
H. E. Ogden et al No. 1 Rawlins, sec. 390 Blk. B-21. Drlg. 1,180 ft.

Cottle County

F. P. Hinds et al No. 1 Lee, 5 mi. SW of Paducah, A.B.&M. Sur. Cg. 4,385 ft.
Wilcox O. & G. Co. No. 1 Richards et al, sec. 761, Blk. Y, W.&G. Sur. M.I.M.

Crane County

J. W. Hampton No. 1 Thackston, W. L. Wilkinson Sur. S.D. 2,200 ft.
Wilcox O. & G. Co. No. 1 McKnight, sec. 9, Blk. 46, Twp. 3s, G.M.M.B.&A. Sur. Drlg. 7,091 ft.

Crockett County

Moore Bros. No. 1 Perner, sec. 37, Blk. 2, I.&G.N. Sur. Drlg. 8,620 ft.
J. N. Simpson No. 1 Hoover, G.C.&S.F. Sur. Tstg. 2,067 ft.
Stewart & Cormas No. 1 Hoover, sec. 1, Blk. FF, B.B. Sur. Tstg. 1,930 ft.

Culberson County

Grisham & Hunter No. 1 fee, sec. 14, Blk. 42, P.S.L. Sur. M.I.S.T.
C. A. Jarrell et al No. 1 C. M. Caldwell, C of SW¼ sec. 15, Blk. 100, P.S.L. Sur. S.D. 507 ft.; H.F.O.; drlg. water well 150 ft.

Dawson County

Albaugh No. 1 Robinson, E.L.R.R. Sur. T.D. 5,038 ft.; tstg.

Dickens County

C. E. Litchfield No. 1 Harris, sec. 354, Blk. 1, H.&G.N. Sur. Drlg. 1,925 ft.
J. F. Morrisey et al No. 1 C. L. Bird, sec. 290, Blk. 1, H.&G.N. Sur. S.D.; W.O. 2,000 ft.

Ector County

Bodins et al No. 1 Edwards. Drlg. 4,054 ft.
Wentz Oil Co. No. 1-D Parker. Drlg. 4,310 ft.
Oil Well Dev. Co. No. 1 Cowden. Tstg. 4,287 ft.
L. H. Wentz Oil Co. No. 1-B Parker. Drlg. 4,286 ft.
Melhoan Drlg. Co. No. 1 Gulf Blakeney. Cg. 4,118 ft.

Edwards County

A. P. Carter No. 1 F. D. Sweeten, B.&B. Sur., 2 mi. E of Rock Springs. S.D.R. 5,180 ft.
Lyles & Dan Auld No. 1 Henderson, H.E. &W.T. Sur. S.D. 3,200 ft.
Richmond Drlg. Co. No. 1 Brown, G.W. T.&P. Sur. Drlg. 4,675 ft.

El Paso County

Tri-State Oil Co. No. 1 Kinkel. Drlg. 3,462 ft.

Fisher County

Daniel & Rhodes No. 1 Nichless, Geo. W. Lawrence Sur. C.O. 3,300 ft.
Dean Bros. No. 1 Young. Drlg. 2,900 ft.
General Crude Oil Co. No. 1 Morrow, sec. 185, Blk. 2, H.&T.C. Sur. Drlg. 3,537 ft.
Southern Oil Co. No. 1 Bocat, H.&T.C. Sur. Drlg. 3,875 ft.

Floyd County

Mills Bennett No. 1 T. Montgomery, F. J. Latham Sur., 6 mi. S of Floydada. Drlg. 3,570 ft.

Gaines County

Amerada Pet. Corp. No. 1 R. W. Robertson, sec. 196, Blk. G, W.T.R.R. Sur. W.O.C. 3,440 ft.
Carter, Continental & Plymouth et al No. 1 Geisecke. S.D. 2,130 ft.
Shell Pet. Corp. No. 1 M. B. Robinson, sec. 344, Blk. G, C.C.S.D.&R.G.N.G. Sur. W.O.C. 4,345 ft.

Garza County

M. L. Richards No. 1 Slaughter. Drlg. 3,320 ft.

Glasscock County

O. B. Greathouse No. 1 Burns, sec. 221, Blk. 29, W.&N.W. Sur. Loc.

Hockley County

Gulf Oil Corp. No. 1 M. G. Gordon, sec. 12, Blk. X, P.S.L. Sur. Loc.
Gulf Oil Corp. No. 1 Mallett Ld. & Cattle Co., sec. 6, Blk. X, P.S.L. Sur. Loc.
Sid Richardson No. 1 Slaughter, Maverick Co. Sch. Lds. Drlg. 3,610 ft.
The Texas Co. No. 2 Slaughter, Labour 92, League 37, Zavalla Co. Sch. Lds. Drlg. 4,965 ft.; S.O.

Howard County

Lockhart Oil Co. No. 1 Hussinger, sec. 67, Blk. 29, W.&N.W. Sur. Drlg. 540 ft.
W. F. McDermott et al No. 1 Lucas, sec. 18, Blk. 29, Twp. 1n, T.&P. Sur., 5 mi. N of Dodge pool. Drlg. 2,942 ft.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thaxton, SE¼ sec. 34, Blk. 74, Twp 6. Drlg. 3,533 ft.
Haymon Krupp No. 1 Briggs, sec. 24, Blk. 73, Twp. 7, T.&P. Sur. Drlg. 2,580 ft.

Jeff Davis County

Joiner Oil Corp. No. 1 Jones-Coffield. S.D. 3,500 ft.

Lamb County

Toddie L. Wynne, Tr. No. 1 Naunschwander, Labour 1, League 660, State Cap't. Lds. Fsg. 3,285 ft.

Loving County

Barnett Pet. Co. No. 1-A Johnson, sec. 2 Blk. 57, Twp. 1, T.&P. Sur. C.O. 3,728 ft.
Carpenter & Grierson No. 1 Mrs. Bennie Barnes, sec. 22, Blk. C-25, P.S.L. Sur. Loc.
Woodley Pet. Co. No. 1 Kiah. T.&P. Sur. S.D.; flwd. 40 B.P.D.; T.D. 3,963 ft.

Lynn County

John L. Baldridge No. 1 Alma Lbr. Co., sec. 151, H.E.&W.T. Sur. Drk.

McCulloch County

Westbrook et al No. 1 Johnson, A. Nevendorf Sur. S.D. 1,803 ft.
Nixon No. 1 Pierce. S.D. 854 ft.

Martin County

Harris-Anderson Oil Corp. No. 1 Mollie Robinson, sec. 33, Blk. 38, T.&P. Sur. Swbg.; T.D. 4,179 ft.

Menard County

G. A. Clements No. 1 Murchison, sec. 80, B.S.&S. Sur., 8 mi. E of Menard. Drlg. 361 ft.
C. D. Haggerty No. 1 Callon, sec. 36, Jim Franz Sur. Spud. and S.D.

Nolan County

Mariand-Drake Drlg. Co. No. 1 J. H Withers, sec. 65, Blk. 21, T.&P. Sur Loc.

Pecos County

Aero Gas & Ref. Co. No. 1 Iowa Trust, sec. 13, Blk. 10, H.&G.N. Loc.
Harry Baker et al No. 1 White & Baker, sec. 53, Blk. 194, C.C.&S.F. M.I.M.
Beneduun No. 1 Trees, H.&G.N. Sur. Drlg. 4,805 ft.
J. J. Dorr et al No. 2 Payton, sec. 99, Blk. 8, H.&G.N. Sur. Cellar and pits.
Ed Fainey No. 1 Trees, sec. 63, Blk. 8, H.&G.N. Sur. W.O.C. 2,055 ft.
E. W. Francis et al No. 1-A Westman, T.&S.L. Sur. Drlg. 2,960 ft.
Humble O. & R. Co. No. 1 Belding et al, 9 mi. SW of Ft. Stockton. D.&A.
Humble O. & R. Co. No. 1 Butz, sec. 104, Blk. O.W. D.&A.
Magnolia Pet. Co. No. 1 McKee. Drlg. 5,205 ft.
Messenger & Osborn No. 1 Humble-Young, sec. 49, Blk. 10, H.&G.N. Sur. S.D.R. 1,807 ft.
S. Thompson No. 1 Elsinore Cattle Co., sec. 54, Blk. D, G.C.&S.F. Sur. Drlg. 7,003 ft.
Thompson & Minshall No. 1 Michaelson, 660 ft. N and W, sec. 24, Blk. 146, T.&St.L. Sur. Drlg. 2,505 ft.
Trans-Pecos Oil Co. No. 1 Gallagher, T.&P. Sur. U.R. 1,620 ft.
Trans-Pecos Oil Co. No. 3-A Papham, G.H.&S.A. Sur. S.D. 1,934 ft.
Walter K. Tuller No. 2 Perry. P.B. to 1,950 ft.
Wilcox O. & G. Co. No. 1 Serf, sec. 27, Blk. 130, T.&St.L. Sur. Drlg. 520 ft.

Presidio County

L. C. Brite No. 4 fee, C NW¼ sec. 113, Blk. 12, G.H.&S.A. Sur. Drlg. 4,375 ft.

Reeves County

Barnett Pet. Corp. No. 1 Ely, sec. 38, Blk. 71, P.S.L. Sur., 12 mi. NW of Toyah. Drlg. 2,985 ft.
C. R. Mallison No. 1 Brown, sec. 62, Blk. 4, H.&G.N. Sur. Loc.
Ohio Oil Co. No. 1 Papham, sec. 18, Blk. 54, T.&P. Sur. R.U.S.T.

Runnels County

Homer Price No. 1 Beddo, sec. 51, Thompson, Casey Sur. S.D. 3,453 ft.
E Z Oil Co. No. 1 B. Fletcher, E. C. Good Sur. T.D. 4,394 ft.; S.D. 4,381 ft.

Schleicher County

J. M. Cooper No. 2 B. Page, sec. 40, Blk. L, G.H.&S.A. Sur. S.D. 5,004 ft.
Tex-Tor Oil Corp. No. 1 Judkins & Spencer, C of SW¼ sec. 33, Blk. A, A.&B. Sur. Drlg. 5,413 ft.

Scurry County

Robinson Drlg. Co. No. 1 Martin, sec. 147, H.&T.C. Sur. P.B. 2,590 ft.; S.D.
T. G. Shaw Oil Co. No. 1 First Natl. Bank. Fsg. 2,750 ft.

Stonewall County

General Crude Oil Co. No. 1 J. D. Smith, sec. 371, Blk. 2, H.&T.C. Sur., 12 mi. N Rotan. Drlg. 304 ft.

Sutton County

Ordovician Oil Co. No. 1 Evans, sec. 1, L. Stubblefield Sur., 32 mi. SE of Sonora. Drlg. 3,980 ft.

Terrell County

D. & S. Oil Co. No. 1 Sam Bell. S.D. 345 ft.

Terry County

C. H. Hutto No. 1 Brownfield, E.L.R.R. Sur. Cg. 686 ft.

Tom Green County

Humble O. & R. Co. No. 1 Lewis & Wardlaw, sec. 5, Blk. 17, H.&T.C. Sur. Fsg. 3,811 ft.

Upton County

W. D. Riser et al No. 1 King Ranch Oil & Lignite Co., sec. 8, Blk. 3, M.K.&T. Sur. S.D.R. 15 ft.
Rutter et al No. 1 Egolb, sec. 5, J. H. Gibson Sur. T.D. 3,250 ft.; swbg.
J. S. Pitman No. 1 D. Elder, C.C.S.D.& R.G.N.G. Sur., Blk. 3, sec. 14. S.D.R. 835 ft.

Ward County

Cities Service No. 2 Brandenburg, sec. 4, Blk. 32, H.&T.C. Sur. Drlg. 825 ft.
M. J. Delaney No. 1 J. E. Cooper, H.&T.C. Sur. Drlg. 2,911 ft.
J. E. Fitzpatrick et al No. 1 H. B. Carr, sec. 125, Blk. 34, H.&T.C. Sur. Drlg. 110 ft.
J. E. Fitzpatrick et al No. 1 F. K. Dyer, sec. 135, Blk. 34, H.&T.C. Sur. R.U. S.T.
Hoss & Downey No. 1 Meyers, sec. 17, Blk. 32, H.&T.C. Sur. Drlg. 608 ft.
Hoss & Downey No. 1 Ross Avery, sec. 36, Blk. 1, H.&T.C. Sur. Drlg. 608 ft.
Patillo & Webster No. 1 Johnson. Drlg. 1,550 ft.
L. F. White et al No. 1 Rector-Monroe, E cor. sec. 3, Blk. 1, W.&N.W. Sur. S.D. 4,710 ft.

Winkler County

Stogner & Pipkin No. 1 Blade, sec. 103, Blk. D, J. H. Gibson Sur. Loc.

Yoakum County

American Liberty Oil Co. No. 1 A. C. Thomas, 2,227 ft. S and 440 ft. W, sec. 864, Blk. D. Drlg. 5,026 ft.
Bahago & Bond Oil Corp. No. 1 J. L. West, sec. 607, Blk. D, J. H. Gibson Sur. Drlg. 410 ft.
J. W. Murchison et al No. 1 Sawyer, SE¼, sec. 702, Blk. D. S.D. 5,030 ft.
Ohio No. 1 Claywater, sec. 638, Blk. D, J.H. Gibson Sur. R.U.R.
Shell Pet. Corp. No. 1 Baumgart, J. H. Gibson Sur. Comp. 468 B.O.P.D.
Shell No. 1-C Baumgart, sec. 866, Blk. D, J. H. Gibson Sur. Drk.
Skelly and Sun Oil Co. No. 1 Kiser, sec. 640, Blk. D. P.B. 5,223 ft.
Texas Co. No. 1 Walker, sec. 794, Blk. D El. 3,656 ft.; T.D. 5,180 ft.; P.B. 5,162 ft.; S.D. 5,162 ft.
Stogner & Pipkin No. 1 Blade, J. H. Gibson Sur. Tstg. 5,266 ft.

E. C. TEXAS WILDCATS

Anderson County

Humble O. & R. Co. No. 1-C Southern Pine Lbr. Co. Cg. 9,092 ft.
H. L. Parsons No. 1 H. B. Hemby, 7 mi. NE of Navarro. Cg. 5,444 ft.

Angelina County

J. C. Bonham No. 1 Cameron Lbr. Co., E. Miller Sur., 3 mi. SE of Zavalla. S.D.
C. E. Parrott No. 1 J. C. Burres, W. Plucker Sur., 2½ mi. W of Huntington. Drk.

Bowie County

Ferguson-Hill No. 1 Breckenridge. S.D. 2,950 ft.
King Oil Corp. No. 1 W. W. Ames, 800 ft. S and 1,650 ft. E of J. A. Tolbott Sur 4½ mi. NW of Texarkana. Drlg. 2,603 ft.

Cherokee County

Merica Oil Co. No. 1 Cherokee Dev. Co., A. J. Acker Sur., 2 mi. E of Maydelle. M.I.M.

Dallas County

Plaza Oil Co. No. 1 Davidson, Marchants Sur., 1 mi. NW of Seagoville. R.U.

Falls County

McCleod et al No. 1 F. Bolton, J. R. Cockrill Sur., 4 mi. NW Rosebud. Fsg. 1,708 ft.

Freestone County

C. E. Rossiter No. 1 J. P. Fulton in J. P. Fulton Sur., 2½ mi. E of Donie. S.D. 956 ft.

Grayson County

Denver Prod. & Ref. Co. No. 1 E. B. Moore, E. Barnes Sur., ½ mi. NW of Whitesboro. Drlg. 200 ft.

Gregg County

Humble O. & R. Co. & Gulf O. Corp. No. 1 E. Robertson, M. Mann Sur., 2½ mi. SW of Longview Trinity test. El. 272 ft.; drlg. 7,842 ft.

Hill County

J. Willis No. 1 W. P. Ball, S. Marshall Sur., 3 mi. NW of Covington. M.I.M.

Lamar County

Cooper Bros. No. 2 L. B. Hayes, L. Roberts Sur. Loc.

Limestone County

C. L. Brown No. 27 N. B. Boyd, R. B. Longbotham Sur., 3 mi. S of Wortham. T.D. 1,402 ft.; oil sd.; S.D.W.O. 1,455 ft.
Pure Oil Co. No. 16-T Kendrick, P. Varella Sur., Mexia field. P.B. from 8,847 ft. fsg.
Stanolind O. & G. Co. No. 1 T. Norris, in Thresher Sur., 5 mi. N of Kosse; 6,500-ft. test; elev. 528 ft.; drlg. 7,389 ft.

McLennan County

Chapman & Kahn No. 1 Carl Hartsman, B. C. Walters Sur., 1½ mi. S of McGregor. Drlg. 773 ft.

Navarro County

Mrs. Jane Robinson No. 1 Fortson Bros., Eli Smith Sur., 5 mi. NE Corsicana. S.D. 1,940 ft.
T. F. Sharpe et al No. 1 E. B. McDowell, T. Jordan Sur., 1¼ mi. S of Bassets. S.D. 3,160 ft.

Trinity County

Bilinoski et al No. 1 Trinity State Bnk., B. F. Wright Sur., 2 mi. S of Trinity. W.O.C. 120 ft.

Upshur County

Tom Hunter and American Liberty No. 1 J. P. Carter, J. H. Fields Sur. Drlg. 4,936 ft.
L. & G. Oil Co. No. 1 H. Williams, Roeder Sur., 2 mi. NW of Gracetown. Drlg. 3,752 ft.

NORTH TEXAS WILDCATS

Archer County

Thos. A. Jirik No. 1 D. L. Wolf, J. Poitevent A-348 Sur. Loc.

Baylor County

H. J. Baker No. 1 J. R. Martin, sec. 233, T.&N.O. Sur. Drlg. 2,100 ft.

Clay County

Barnett Pet. Co. No. 1 Ben Nutter, sec. 30, Grayson Co. Sch. Lds. Pits.
Healdton O. & G. Co. No. 1 Wallace, Belcher Subd. Drlg. 3,070 ft.
Seitz, Comegys & Seitz No. 1 L. Wright, sec. 2632, T.E.&L. Sur. Set surf. csg. and W.O.C.

Cooke County

Byars & Nenny No. 1 W. A. Scroggins, S. P. Yearwood Sur. A-1,554. Drlg. 2,710 ft.
W. O. Russell No. 1 Bundy P. Cady. Sur. Testing S.S.O. 2,164-68 ft.
W. O. Russell No. 1 J. W. Sherrill, Wm. Phelps Sur. A-821. S.D. 2,121 ft.

Seitz, Comegys & Seitz No. 1 J. D. Walker, F. Hamilton Sur. A-448. Loc. Whitfield, Pearson & Grimes No. 1 W. G. Dozier. R.U.R. and S.D.

Denton County

W. C. Curry et al No. 1 G. F. Owens, N Rudder Sur. A-1,060. Show gas 1,235-50 ft.

Bruce Lee No. 1 Boyles. S. Ross Sur. A 112. Temp. abd. 1,902 ft.

Wells-Dodson-Pearson No. 1 Hughes. B.B.B.&C. Sur. A-1252. S.D.O. 2,200 ft.

Foard County

O. P. Burnham No. 1 T. L. Ward, sec. 21. H.&T.C. Sur. S.D.O. 2,361 ft.

Texas Co. No. 14 Johnson, sec. 37. S.P R.R. Sur., Blk. L. Lime 3,760-80 ft.; C.O.

Jack County

Hanlon-Buchanan, Inc., No. 1 Ed M. Myers, N. F. Rudmose Sur. A-1,803. O.S. 3,830-40 ft.; shot with 40 qts.; 2,800 ft. of oil in hole; testing.

O. J. Perrin No. 1 J. S. Rhodes, J. W. Coates Sur. A-1,240. Drk.

Taubert & McKee No. 1 R. H. Eatherly, J. H. Henderson Sur. A-1,749. Spud and S.D.

Van Eman & Richards No. 1 Whitsell Wm. McElroy Sur. A-559. Drlg. 1,795 ft.

Montague County

J. W. Sorrell et al No. 1 J. E. Walthall Sam. H. Smith Sur. A-662. Drlg. 2,718 ft.

Wichita County

Burk Royalty Co. No. 1 W. L. Hodges. Lot 8, H.T.&B. Sur. A-139. 6⅝-in. 3,753 ft.; drlg. O.S. and S.L. 3,899-3,933 ft.; est. 500 bbls.; tstg.

Geier Bros., Inc., and F. B. Jackson, Jr., No. 1 C. F. Ancell, W.&M. Sur. A-1292. Fishing 3,977 ft.

W. E. Hammon No. 1 Mrs. H. Lalk. Blk 284, W.C.S. Sur. U.R. 10-in. csg.

Rathke Oil Co. No. 1 S. B. Burnett "Gulf," sec. 4, H.T.&B. Sur. A-752. Drlg. 1,400 ft.

Staley Oil Co. No. 1 First National Co Blk. 44, K.W.V.F.L. Sur. Shot L. and O.S. 3,817-77 ft.; C.O.; est. 500 bbls.

E. J. Stump No. 1 M. P. Bishop, L. Netherly Sur. A-240. S.D.O.; S.L. 3,885-3,997 ft.; T.D. 4,043 ft.

Clyde Texan Oil Fields Co. No. 1 A. W. Burnside, John M. Sharp Sur. A-262 S.L. 3,935-76 ft.; C.O.; H.F.O.

Joe A. Worsham No. 1 Waggoner Bros., sec. 13, B.S.&F. Sur. A-343. Drlg. 3,600 ft.

T. L. Wynne, Tr., No. 1 Waggoner Bros., Lot 36, H. George Sur. 6⅝-in. 3,846 ft.; drlg. 3,910 ft.; H.F.O.

Wilbarger County

Barry & Hayes No. 1 McGill, sec. 3, Blk. 9, H.&T.C. Sur. S.D. 3,030 ft.

W. Little No. 1 A. P. Morris, sec. 3, H.T &C. Sur., Blk. 14. Drlg. 1,810 ft.

Phillips Pet. Co. No. 1 W. T. Waggoner "Barger," sec. 11, H.&T.C. Sur., Blk. 14. Drlg. 1,970 ft., shale.

Young County

Anzac Oil Corp. No. 1 E. S. Graham, A Hines Sur. A-135. Fishing; T.D. 3,775 ft.

C. E. Beavers et al No. 1 Cooper, sec. 81. Drlg. 1,197 ft.

N. B. Crenshaw No. 1 J. C. Dwight, sec. 1,444. T.E.&L. Sur. S.D. 400 ft.

L. A. Long No. 1 F. A. Burnett, E. G. Rector Sur. No. A-239. R.U.C.T.

RANGER (CENTRAL TEXAS) DISTRICT

Brown County

C. R. Cox, Tr., No. 1 Jan Lee, sec. 11, B.B.B.&C. Sur., NE cor. county. S.D. 240 ft.

H. P. Evans No. 1 J. T. Hall, 2 mi. N of Bangs, 220 ft. from N line and 11,008 ft. from W line of SW¼ sec. 25, H.T. &B.R.R. Sur. Drlg. 425 ft.

R. B. Irving et al No. 1 T. C. Giddings, 390 ft. from S line and 3,382 ft. from W line of J. J. Clelland Sur., 1 mi. E Thrifty. Correct owner was Irving & Prairie Oil Co.; 1,500-ft. test; drlg. 450 ft.

Lyon-Roush No. 1 W. D. Mullis, 12 mi. SW of Bangs, 1,170 ft. from N and E lines of A. D. Nell Sur., Subd. 33. Loc.; 1,000-ft. test.

R. M. Ragsdale et al No. 1 Cox & McGinnis, 10 mi. SE Cross Cut, 330 ft. from N & E lines of J. H. Rider Sur. A-1570. Loc. 2,500-ft. test.

Callahan County

Bibble & Prather No. 2 Ace Hickman, 2 mi. NW Admiral, 320 ft. from NE and 480 ft. from E line of NW¼ NE¼, sec. 1, I.&G.N. Sur. Drlg. 200 ft.

Dudley Dev. Co. No. 1 Smith Hrs., 7 mi. NW of Oplin, 1,080 ft. from S line and 620 ft. from W line of W½ of SW¼ sec. 4, S.P.R.R. Sur., Blk. 1. Loc.; 2,200-ft. test.

R. F. Gilman et al No. 1 W. A. Young, 5 mi. NW Clyde, sec. 37, B.B.B.&C. Sur Drlg. 1,700 ft.

Hal Hughes No. 1 Poindexter, sec. 350, Geo. Hancock Sur., 2 mi. NE of Oplin T.D. 3,175 ft.; S.D.

J. C. Jackson et al No. 1 Thompson, 2 mi S. Eula, sec. 30, B.B.B.&C. Sur. S.D. 1,510 ft.

S. B. Owens No. 1 H. Shanks, 6 mi. N of Oplin, 660 ft. from S and W lines of farm or 660 ft. from S line and approx. 2,800 ft. from E line of sec. 1 S.P.R.R. Sur., sec. 1, Blk. 1. Drlg. 1,800 ft.

Phillips Pet. Co. No. 1 Cozart, 1 mi. NW Scranton, M. Cherry Sur. S.D. 2,600 ft.

R. F. St. John No. 1 A. E. Dyer, 4 mi. NW of Clyde, 1,385 ft. from E line and 1,323 ft. from S line of sec. 40, B.B.B. &C. Sur. Prep. to set pipe; drlg. 1,950 ft.

Woodley Pet. Co. No. 1 Flores-Deep, 5 mi. SE of Baird, sec. 149, B.B.B.&C. Sur Sat. L. 4,223-33 ft.; trtd. 1,000 and 2,000 gals.; prep. to retreat.

Coleman County

J. F. Brock No. 1 J. H. Livingston, SE cor. SW¼ county, J. D. Waters Sur. No 208. Drlg. 750 ft.

Vic Eckholm et al No. 1 W. S. Duty et al, 5½ mi. S of Burkett, 220 ft. from N and W lines of SE¼ sec. 25, H.T.&B. Sur. Spud 2,500-ft. test.

R. M. Ragsdale et al No. 1 Stewardson, 9 mi. S of Santa Anna, 1,650 ft. from E line and 450 ft. from S line of Wm. Harris Sur. No. 279. Loc. 100-ft. test.

J. Walker, Tr. No. 1 W. L. Vaughn, 1½ mi. SW of Trickham, 200 ft. from N and W lines of sec. 80, A. Lipscomb Sur. Loc. 1,300-ft. test.

Comanche County

N. D. Gallagher et al No. 1 Mrs. B. I Terry, Desdemona pool, N. H. Kuykendall Sur. S.D.

Dobbs Oil Co. No. 1 Hodges, sec. 11, Blk 2, H.&T.C. Sur. Drlg. 2,600 ft.

Eastland County

G. D. Chastain et al No. 1 Weddington, 4 mi. N. Cisco, sec. 496. S.P.R.R. Sur L. 3,315-30 ft.; est. 40 bbls.; drlg. 3,800 ft.

Hickok Prod. & Dev. Co. No. 1 J. E. Donovan, 5 mi. NW of Cisco. 660 ft. from N and E lines of NW¼ sec. 489, S P R.R. Sur. Drlg. 3,005 ft.

T. W. Johnson et al No. 1 Mary L. Jackson, ½ mi. SE of Carbon, 555 ft. from N line and 160 ft. from W line of farm, or 555 ft. from N line and approx. 1,000 ft. from E line of sec. 34, H.&T.C. Sur., Blk. 2. Loc. 1,500-ft. test.

J. D. Kittrell No. 1 Reynolds, 5 mi. E of Carbon, sec. 23, H.&T.C. Sur., Blk. 1. Prep. to deepen.

Lone Star Gas Co. No. 1 M. Thomas, 5 mi. NW of Cisco, 668 ft. from N line and 660 ft. from E line of SE¼ sec. 478, S.P.R.R. Sur. Drlg. 800 ft.

Monark O. & G. Co. No. 1 Downtain, sec 14 H.&T.C. Sur. Blk. 4, 3 mi. N East land. S.D. 2,175 ft.

J. R. Nichols et al No. 1 R. W. Murray Hrs., 3½ mi. SE of Carbon, 330 ft. from N and W lines of SW¼ sec. 4, H.&T.C. Sur., Blk. 2. Loc. 2,100 ft.

Erath County

J. Hickey et al No. 1 Smith, 5 mi. SE Desdemona, J. B. Smith Sur. Shot with 165 qts. 2,906-3,065 ft. in sd.; S.D.

Fisher County

Sunray Oil Co. No. 1 Snowden Lse. (10-ac. tr.), 330 ft. from S line and 1,270 ft. from W line of Sur., 2½ mi. NE of Rotan, H.&T.C. Sur., sec. 185. Loc.

Jones County

Bells Wells Oil Co. No. 1 R. L. Pond, 4½ mi. NE Avoca, 330 ft. from S and W lines of NE¼ sec. 165, B.B.B.&C. Sur. Loc.

Fain & McGaha Oil Corp. No. 1 Mrs. L. E. Williams, 3½ mi. SW Nugent, 220 ft. from S & W lines of NE¼ of Sec. 37, T.&P. Sur., Blk. 15. Sdy. L. 1,935-55 ft.; shot with 40 qts.; tstg.

Felmont & Adams No. 1 Woodson, 1½ mi. SE Avoca, sec. 200, B.B.B.&C. Sur. 311. Drlg. 3,290 ft.

Owens-Snebold No. 1 Alice Rhodes, 4 mi. W of Nugent, 330 ft. from N and W lines of NW¼ sec. 31, T.&P. Sur., Blk. 15. Digging pits; 4,000-ft. test.

Grisham & Hunter No. 1 E. D. Appling, NW¼ county, 1,208 ft. from S line and 1,450 ft. from W line of SW¼ sec. 32, B.B.B.&C. Sur. Sand 2,490-2,500 ft.; 1 B.W.P.H.; drlg. 2,800 ft.

Gwynn & Overby et al No. 1 Mrs. W. D. Baker, 4½ mi. SE of Anson, 220 ft. from N and W lines of S½ of SE¼, sec. 36, O.A.L. Sur. S.D. 1,050 ft.

Mack Hayes and Montour Oil Co. No. 1 Chittenden, 7 mi. SE Hamlin, Subd. 18, McMullen & McGloin Sur. 337. Drlg 2,700 ft.

W. L. Herring No. 1 J. S. Dodge, 1½ mi. SW of Hawley, 2,450 ft. W and 1,320 ft. N of most southerly SE cor. of sec 5, T.&P. Sur., Blk. 16. S.D. 1,650 ft.

T. D. Humphrey No. 1 Fielder, 2½ mi. J Anson, sec. 34, O.A.L. Sur. Drlg. 2,505 ft.

Bells Wells Oil Co. No. 1 M. Caton. S.D

Oil States Expl. Co. No. 1 Olson, 4 mi. N Avoca, sec. 182, B.B.B.&C. Sur. S.D 2,265 ft.

Riddle et al No. 1 J. D. Freeman, 8 mi. SW Anson, sec. 6, T.&P. Sur., Blk. 17. S.D.

Roeser & Pendleton No. 1 fee, 2 mi. NW of Nugent, 2,800 ft. from N line and 3,240 ft. from W line of sec. 4, T.&P. Sur., Blk. 15. Drlg. 3,500 ft.

Shaheen Oil Co. et al No. 1 Jenson, 2 mi E of Avoca, sec. 198, B.B.B.&C. Sur. S.D. 2,755 ft.

Dale Smith & Bert Fields No. 1 C. L. Carter, 3 mi. SW of Nugent, 220 ft. from N and W lines of SE¼ of SE¼ sec. 37, T.&P. Sur., Blk. 15. Drlg. 1,390 ft.

Stanton & Miller No. 1 Gaither, 4½ mi. N of Anson, sec. 38, B.B.B.&C. Sur. S.D.

L. R. Terry et al No. 1 J. O. Bartlett, SE cor. county, 150 ft. from S and E lines of 40-ac. tr. in B.A.L. Sur., sec. 9. S.D. 500 ft.

Mills County

Balyaet & Boyd No. 1 Westbrook, 7 mi. W of Goldthwaite, 4,950 ft. from S line and 4,290 ft. from W line of Caldwell Co. Sch. Ld. Sur. Drlg. 900 ft.

Palo Pinto County

Brazos River Gas Co. No. 5 M. B. Costello B, 1½ mi. N Pickwick, 1,397 ft. from N line and 150 ft. from W line of survey (W line being river bank), 660 ft. SW No. 4, R. R. Williams Sur. Drlg. 3,100 ft.

W. H. Clement No. 1 Federal Life Ins. Co., 2 mi. W Mineral Wells, sec. 51, T.&P. Sur., Blk. A (E of B). Drlg. 1,450 ft.

Bill Cole et al No. 1 J. W. Harris Est., NW cor. county, De La Garza Sur. Drlg. 850 ft.

W. K. Gordon et al No. 1 Johnson, 5 mi. N Gordon, John Bird Sur. Drlg. 3,550 ft.

Henry Hobbs et al No. 1 Bessie Holt, 4 mi. S. Graford, sec. 1,783, T.E.&L. Sur. S.D. 200 ft.

King Oil Co. No. 1 S. F. Lee, 4 mi. NW Graford, 933 ft. from N and W lines of sec. 1,744, T.E.&L. Sur. Drlg. 3,985 ft.

Ernest Lloyd et al No. 1 McClure, 3 mi NE Graford, sec. 2,004, T.E.&L. Sur S.D. 1,200 for csg.

Shackelford County

Joe DeGrazier No. 1 Harbough, E cen. part of county, sec. 1,563, T.E.&L. Sur. 4,500-ft. test; S.D. 360 ft.

Forest Dev. Corp. No. 1 T. G. Hindrick, NW cor. of county, 2,600 ft. from N line and 4,300 ft. from W line of sec. 1, A.B.&M. Sur. Drlg. 1,560 ft.

T. D. Humphrey No. 1 Alston, NE cor. county, sec. 16, H.&T.C. Sur., Blk. 3. Drlg. 1,990 ft.

C. J. Kleiner et al No. 1 Morris, 2 mi. NE Bluff Creek pool, sec. 187, E.T.R.R. Sur. Drlg. 2,050 ft.

Owens-Snebold Oil Corp. No. 1 Haterius, sec. 163, B.B.B.&C. Sur. L. 3,190-91 ft.; S.O.; S.D.

R. W. Widener No. 1 Mrs. N. B. Guitar, SW cor. county, 220 ft. from N and W lines of E½ of SE¼ sec. 56, T.&P. Sur., Blk. 14. Drlg. 1,760 ft.

Stephens County

Danciger Oil Ref. Co. No. 1 Mrs. Aileen Copeland, 8 mi. SE Ivan, 1,196 ft. from E line and 350 ft. from S line of sec. 1, M.E.P.&P. Sur. Drlg. 1,575 ft.

I. C. Little No. 1 R. M. Rogers, NE¼ of county, 150 ft. from E line and 1,980 ft. from S line of sec. 28, T.&P. Sur., Blk. 5. Drlg. 2,900 ft.

G. Willard Rich No. 1 M. M. Andrews, SW cor. county, 450 ft. from S line and 300 ft. from W line of N½ sec. 39, T. &P. Sur., Blk. 7. Loc.; 4,500-ft. test.

Taylor County

A. Findley No. 1 Bowles Est., NE cor county, sec. 26, B.A.L. Sur. S.D. 2,000 ft.

E. G. Mahan et al No. 1 Edna Alexander, 4 mi. NE of Abilene, 210 ft. from E line and 320 ft. from S line of E 80 ac. of S½ sec. 22, B.A.L. Sur. R.U. Spdr.

Wichita Prod. Co. No. 1 E. Lincicum, NE cor. of county, 990 ft. from N line and 1,195 ft. from E line of NW¼ sec. 21, B.A.L. Sur. S.D. 1,460 ft.

Throckmorton County

Morris & Spoonts No. 1 Alden Bros., NW cor county, 1,350 ft. from E line and 5,210 ft. from S line of Raymond Sanches Sur. A-248. Drlg. 425 ft.

Henry Zweifel No. 1 J. H. Lee, 4 mi. NE of Woodson, 930 ft. from E line and 2,011 ft. from S line of J. A. George Sur. Drlg. 300 ft.

Wise County

Latex Oil Co. No. 1 Smith, 3 mi. E of Bridgeport, Jas. Couch Sur. T.D. 4,075 ft.; P.B. to 3,910 ft.; drlg. plug.

Canadian Fields

(Continued from Page 90)

in the Benton shales with the cardium marker not yet reached. Location is about 2 miles west of Sterling Pacific producers.

Far West Prospects

The gradual extension of Turner Valley drilling activity down the west flank brings up the question of how far the crude producing area is likely to extend. Geological investigation indicates the existence, to the west, of a fault or break in the surface structure commencing at the north in section 22-20-3w5 and extending southeasterly some 15 miles as far as the Highwood River and possibly beyond. It runs parallel to the main Turner Valley structure and traverses sections 22, 15, 11 and 2 in Township 20-3w5; sections 36, 25, 19, 18, 17 and 6 in Township 19-2w5 and sections 31, 29, 20, 17, 16 and 9 in Township 18-2w5. For the northernmost 4 miles it is a dividing line between the surface exposures of the Belly River and the ordinarily underlying Upper Benton; then continues through the eastern portion of the Belly River outcrop to section 6-19-2w5; for a mile farther is the dividing line between the Belly River and the remains of the ordinarily overlying Edmonton formation; and thence continues through the center of the surface exposure of Edmonton. There is a parallel fault approximately 1½ miles to the west.

Drilling in the vicinity has been insufficient to determine whether the sole fault, so-called, is merely superficial or extends to depth. The only wells now drilling west of the sole fault and east of the parallel fault are Okalta Oil Co. No. 6, LSD 3, section 30-18-2w5, and Scottish Petroleums No. 1, LSD 16, section 19-18-2w5. The most westerly crude producers in Turner Valley—the Commoil, Sunset, Royal Canadian, Prairie Royalties and Brown No. 2, are only a short distance east of the sole fault, and are among the largest producers.

Drilling Contractors

(Continued from Page 67)

cat operations listed, as two more were marked off the list as failures. These were Stanolind Oil & Gas Co. No. 2 Warren Minerals at the Hockley dome in Harris County and Texas Gulf Production Co. No. 1 Rath in the same county.

W. V. Bowles has staked location for his No. 2 Robertson, 660 feet southwest of his discovery well of the East Telferner field in Victoria County. The discovery well was completed for an initial production of 20 bbls. per hour through a quarter-inch choke, but during the last 16-hour gauge, it flowed only 39 bbls. through a three-sixteenths inch choke and will probably be recompleted as the screen is believed to have sanded up. A proposed diagonal offset to the discovery is reported to have been made by the Sun Oil Co.

Glen H. McCarthy No. 1 Hebert & Broussard, a prospective pool opener for the Cheek area, Jefferson County perforated casing at 7,729-31 feet and tested 1,700 feet of pipe line oil, 300 feet of salt water and 100 pounds of pressure. The perforations have been squeezed off and perforations are scheduled to be made higher. McCarthy lost one of his large rotaries which was being operated by the Sun Oil Co. at No. 1 Bayshore Farms Inc. in the Palacios field, Matagorda County. While coming out of the hole after making a drill stem test at 9,245-75 feet, the well started blowing out. The blowout preventer was closed and while the operators were trying to relieve a surface pressure of 5,000 pounds, the well got out of control and caught fire within a few minutes. In the old Orange field, No. 2 Brown is drilling below 1,800 feet while in the Benavides field, Duval, McCarthy's No. 1 Plocker, extended the Pettus sand a short distance to the south when it was completed for a good producer.

Nicklos Drilling Co. has reached an interesting depth in No. 1 Faye, a wildcat being drilled for the Continental Oil Co. in Jefferson Davis Parish, Coastal Louisiana. Late in the week is was drilling below 10,487 feet. Other operations continue for the same company at Villa Platte in Evangeline Parish and at Tepetate in Acadia Parish while at the Valentine field, three rotaries are operating for the Pan American Production Co.

East Texas Fields

(Continued from Page 76)

feet; No. 3 P. McGeorge, 3,480-83 feet, 73 bbls.; No. 6 E. L. Walker, 3,570-76 feet, 60 bbls. Gulf Oil Corp. No. 15 Fonville, 3,506-60 feet, 62 bbls. Magnolia Petroleum Co. No. 19 A. Christian, 3,607-45 feet, 80 bbls.; No. 21 A. Christian, 3,651-65 feet, 80 bbls. Rajo Oil Co. No. 14 J. C. Barrett, 3,605-10 feet, 40 bbls. Stanolind Oil & Gas Co. No. 7-A B. Jones, 3,585-3,685 feet, 51 bbls. Stanolind-Tide Water No. 27 J. C. Pearson, 3,461-3,541 feet, 59 bbls. Sun Oil Co. No. 14 E. C. Shoultz, 3,620-3,727 feet, 60 bbls. Superior Oil Co. No. 11 A. Jones, 3,619-73 feet, 60 bbls. Tysro Oil Co. No. 6 Anderson, 3,492-3,510 feet, 40 bbls. United East & West No. 10 E. L. Walker, 3,605-07 feet, 75 bbls. A. Wynne and others No. 2 Carter, 3,586-3,618 feet, 57 bbls.

Gregg County—Kilgore Area

Amerada Petroleum Co. No. 12 W. D. Lacey, 3,552-73 feet, 47 bbls. Galves Oil Co. No. 6 Alexander, 3,513-22 feet, 12 bbls. General American No. 18-A J. Douglas, 3,635-37 feet, 90 bbls. Grace Oil Co. No. 4 M. Barton, 3,500-17 feet, 40 bbls. Hamil & Smith No. 4 J. B. Hughey, 3,547-79 feet, 50 bbls. J. J. Jenkins No. 3 Crane, 3,513-85 feet, 60 bbls. Lone Star Oil Co. No. 3 Griffin, 3,541-65 feet, 60 bbls. Magnolia Petroleum Co. No. 7 Ed. Mitchell, 3,569-85 feet, 7 bbls.; No. 8 Mitchell, 3,569-3,600 feet, 20 bbls. Midfield Oil Co. No. 5 J. & E. Benson, 3,773-75 feet, 40 bbls. Shell Petroleum Corp. No. 17 Willoughby, 3,531-98 feet, 60 bbls. Stanolind Oil & Gas Co. No. 4 A. A. Lockhart, 3,610-14 feet, 28 bbls.

Rusk County—Kilgore Area

Humble Oil & Refining Co. No. 180 L. D. Crim, 3,635-45 feet, 70 bbls.; No. 14-A H. Sexton, 3,717-22 feet, 75 bbls. McDonald Brothers No. 5 Brock estate, 3,635-39 feet, 60 bbls. Meco Production Co. No. 9 Futch-Cooper, 3,686-88 feet, 40 bbls.

Rusk County—Joiner Area

B. Aston No. 4-A J. R. Alford, 3,676-3,725 feet, 60 bbls. Bering Oil Co. No. 1-A Knight, 3,620-22 feet, 70 bbls. Humble Oil & Refining Co. No. 13 Blackwell, 3,682-85 feet, 60 bbls.; No. 8-B Sexton, 3,655-3,715 feet, 60 bbls.; No. 25 Wheelis, 3,724-26 feet, 60 bbls. Hunt Oil Co. No. 10-A Smith-Wilson, 3,675-81 feet, 160 bbls. G. McMillian No. 6 Thrash, 3,736-63 feet, 80 bbls. Major Oil Co. No. 2 Cravin, 3,754-56 feet, 60 bbls. Ohio Oil Co. No. 9 Kangerga, 3,600-50 feet, 36 bbls. Regent Oil Co. No. 9-B Warmon, 3,757-65 feet, 75 bbls. Sinclair Prairie Oil Co. No. 21 Ledbetter, 3,651-62 feet, 45 bbls. Stanolind Oil & Gas Co. No. 11 Mason, abandoned location.; No. 9-B Schuyler, 3,625-73 feet, 16 bbls. Turman Oil Co. No. 10 M. & R. Kangerga, 3,671-3,701 feet, 84 bbls. Ward Oil Co. No. 25 E. S. Thrash, 3,770-3,804 feet, 60 bbls.

Smith County

O. Goldsmith No. 2 Wiley, 3,860-61 feet, 64 bbls. Sun Oil Co. No. 11-A Burns, 3,748-50 feet, 40 bbls.

Upshur County

Barnett Petroleum Co. No. 9 Phillips, dry and abandoned 3,790 feet. Ellis Oil Co. No. 19 C. J. Mackey, 3,727-32 feet, 60 bbls. Humble Oil & Refining Co. No. 11 A. O. Phillips, 3,637-87 feet, 55 bbls. Magnolia Petroleum Co. No. 31 J. W. Free, 3,698-3,715 feet, 80 bbls. P. H. Pewitt No. 22 Williford, 3,694-96 feet, 10 bbls. Stanolind-Continental-Tide Water No. 18-A Flewellen, abandoned location; No. 19-A Flewellen, abandoned location. Sun Oil Co. No. 22 Hargraves, 3,687-88 feet, 26 bbls.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

H. L. Hunt No. 1 City of Palestine, 5,343-66 feet, 73 bbls. per day.

Franklin County

In the Talco field, Grey & Wolf No. 2-B Bolin, 4,248-4,319 feet, 200 bbls. per day. Housh & Tompson No. 10 Owings, 4,104-4,270 feet, 268 bbls. per day. Humble Oil & Refining Co. No. 5 Leake, 4,143-4,306 feet, 332 bbls. per day; No. 3-B L. Wimms, 4,150-4,303 feet, 271 bbls. per day. Magnolia Petroleum Co. No. 1 Maxton, 4,187-4,315 feet, 353 bbls. per day.

Hopkins County

In the Sulphur Bluff pool, Hager-Luce & Russ No. 5 Reynolds, 4,475-4,526 feet, 75 bbls. per day.

Titus County

Humble Oil & Refining Co. No. 4 Belcher, 4,229-4,343 feet, 208 bbls. per day; No. 55 King, 4,195-4,312 feet, 205 bbls. per day. Lucey Petroleum Co. No. 14 Williams, 4,270-95 feet, 256 bbls. per day. R. E. Moore No. 4 Moore, 4,167-4,284 feet, 96 bbls. per day.

Navarro County

Tom Sharp and others No. 1 McDowell, dry and abandoned at 3,160 feet.

Van Zandt County

Lyde & Greer No. 1 M. M. Christman, dry and abandoned at 1,304 feet.

NORTH TEXAS COMPLETIONS

Archer County

Eddleman & Payne, Inc. No. 6 Parrish A, 1,590-1,606 feet, 15 bbls. Rathke Oil Co. No. 7 J. M. Bloodworth, 1,219-27 feet, 10 bbls.

Clay County

Bridwell Oil Co. No. 4 H. C. Edrington A, 1,098-1,109 feet, 150 bbls.; No. 7 H. C. Edrington A, 1,115-25 feet, 75 bbls. W. H. Metzner No. 1 J. J. Taylor, 1,092-1,115 feet, 125 bbls.

Jack County

Cochburn Oil Co. No. 3 R. R. Clayton and others A. 3,020-98 feet, 410 bbls. L. C. Harrison and others No. 1 L. S. Wright and others, 4,801 feet, dry.

Wichita County

Deep Oil Development Co. No. 2 Munger H, 3,682-3,843 feet, 500 bbls. King Oil Co. No. 1 J. and J. Waggoner, 3,761-93 feet, 615 bbls. C. F. Koip No. 6 W. D. McClure, 1,930-42 feet, 165 bbls. Petroleum Production Co. No. 83 First National Co., 3,655-3,838 feet, 555 bbls. Reed Glass & Crenshaw No. 14 First National Co. B, 3,638-3,846 feet, 750 bbls.

Wilbarger County

George M. Shaner and others No. 1 W. T. Waggoner A, 1,989 feet, dry.

Young County

Christie Brothers No. 1 Dozier, 3,512-3,898 feet, 10 bbls. W. F. Collins and others No. 1 L. D. Box, 615 feet, dry. Charles Knox No. 2 W. Worsham, 3,855-3,949 feet, 1,200 bbls.

Gulf Coast Fields

(Continued from Page 66)

flowing through a 29/64-inch choke on the tubing and a 12/64-inch bottom hole choke, it flowed 46 bbls. of distillate.

Gulf Oil Corp. No. 3 State, Timbalier Bay Prospect, Lafourche Parish, a probable pool opener, which has been in the process of completion for several weeks, is setting screen for a final completion test after a drill stem test at 6,955-62 feet showed 920 feet of pipe line oil and several hundred feet of mud with no salt water. Previous tests below the above horizon showed pipe line oil, and several hundred feet of salt water.

Shell Petroleum Corp. No. 1 Barbour, a wildcat in St. Mary Parish, was being watched with interest as a Schlumberger survey and side wall cores showed favorable indications. Bottomed at 10,417 feet, a Schlumberger survey showed a sandy body at 10,088-108 feet which recorded 150 millivolts porosity and 55 ohms resistivity. Side wall cores taken at 10,089-91-93-96-98 and 10,100 feet showed sand carrying a good odor of gas. Location is in section 21-15s-12e.

Jennings Field

Prospects were bright for the first oil production on the southeast flank of the Old Jennings field, Acadia Parish as Shell Petroleum Corp. prepares to test No. 3 Community. The hole was plugged back to 7,108 feet and on a drill stem test at 7,085-95 feet, it showed 23 stands of pipe line oil. Previous development by the company on the southeast flank resulted in distillate production.

Humble Oil & Refining Co. No. 1 T. S. Stegall, a deep test on the northwest flank of the old Welsh field, Jefferson Davis Parish, has been abandoned at 9,010 feet. One mile south of this dry hole, location has been made by Stanolind Oil & Gas Co. for No. 1 W. B. Conover and others in section 20-9s-5w.

One-half mile northwest of the discovery well of the Lirette field, Terrebonne Parish, Humble Oil & Refining Co. cemented 7-inch casing at 9,027 feet in No. 1 Frank Wurzlow and is preparing to drill ahead. The well is reported to be checking 70 feet lower than the discovery well.

Active development of the recently opened shallow sand in the Charenton field, St. Mary Parish is expected following the completion of Pan American Production Co. No. 2 Veeder on the west side of the field which flowed 383 bbls. per day from sand at 1,868-1,902 feet. Gravity of the oil tested 23.6 degrees.

The Bayou DesAllemands field, St. Charles Parish, opened in July of last year with the completion of Amerada Petroleum Corp. No. 1 State, was proven to be on a salt dome structure by the same company's No. 1 St. Charles Land Co. 945 feet west of the discovery, in section 38-15s-20e. The salt formation was topped at 9,255 feet and cored to a total depth of 9,263 feet. A Schlumberger survey showed 7 ohms resistivity and 130 millivolts porosity, and 7-inch casing has been cemented at 7,200 feet for a production test. The discovery well was completed through perforated casing at 6,820-30 feet for an initial production of 443 bbls. per day through a quarter inch choke. It is reported that this well is now making considerable salt water.

COMPLETIONS TEXAS COAST

Completions of the week with pay sand record or total depth, and initial 24-hour production follows:

Brazoria County

Hastings field: Humble Oil & Refining Co. No. 4 J. E. Alexander, 6,125 feet, 599 bbls.; Humble Oil & Refining Co. No. 6-D W. F. Beers, 6,070 feet, 664 bbls.; Humble Oil & Refining Co. No. 4 W. G. McDeed, 6,080 feet, 668 bbls.; Humble Oil & Refining Co. No. 2 Cecil O'Connor, 5,650 feet, 632 bbls.; Stanolind Oil & Gas Co. No. 13 Shaw, perforated casing 5,539-64 and 5,593-5,603 feet, 574 bbls.; Humble Oil & Refining Co. No. 5 W. H. Schindler, 6,080 feet, 664 bbls.; Stanolind Oil & Gas No. 6 J. C. Hutchinson, 5,535 feet, 504 bbls.; Stanolind Oil & Gas Co. No. 3 W. S. Wright, perforated casing 6,060-70 feet and 6,085-96 feet, 435 bbls. Lockridge field: Gulf Oil Corp. No. 1 Great Southern Life Insurance Co. 9,684 feet, abandoned. Old Ocean field: Harrison and Abercrombie No. 1 Copeland, 11,136 feet, perforated casing 10,660-77 feet, 307 bbls. various chokes. West Columbia field: Sterling Oil & Refining Co. No. 1 Smith, 5,913 feet, 642 bbls. All production was on quarter-inch choke unless otherwise given.

Chambers County

Anahuac field: Humble Oil & Refining Co. No. 11-X Zappe, 7,085 feet, 675 bbls. quarter-inch choke; Humble Oil & Refining Co. No. 18 Clark, 7,085 feet, 681 bbls. quarter-inch choke.

Fort Bend County

Boling field: Mackhank Oil Co. No. 7-C E. C. Farmer, 4,522 feet, plugged back, total depth 4,420 feet, 105 bbls. nine-sixty-fourths inch choke. Orchard field: Gulf Oil Corp. No. 55 Moore, 4,566 feet, abandoned.

Galveston County

Dickinson field: Atlantic Refining Co. No. 1 H. C. & W. G. Jones, perforated casing 8,093-98 feet, 17 bbls. per hour, three-eighths inch choke. J. K. Hughes Oil Co. No. 1 J. C. Ecret, perforated casing 8,990-98 feet, 54 bbls. distillate and 4,000,000 cubic feet of gas, quarter-inch choke.

Harris County

Fairbanks field: Amerada Petroleum Corp.-Stanolind Oil & Gas Co. No. 1-B L. Dopslauf, 6,829 feet, 80 bbls. per day, quarter-inch choke. Friendswood field: Humble Oil & Refining Co. No. 1 J. H. Ross and others, 6,015 feet, 620 bbls. quarter-inch choke. Tomball field: Humble Oil & Refining Co. No. 1 C. C. Ashley, 5,565 feet, 480 bbls. quarter-inch choke.

Liberty County

Hardin field: Gulf Oil Corp. No. 1 V. B. Hinson, perforated casing 7,620-28 feet, 561 bbls. quarter-inch choke; Strake Petroleum Co. No. 3 Finley, perforated casing 7,534-36 feet, 93 bbls. distillate and 29 bbls. of salt water, three-eighths-inch choke; Woodley Petroleum Co. No. 5 McMurtry, perforated casing 7,572-70 feet, 523 bbls. quarter-inch choke.

Washington County

Clay Creek field: Sun Oil Co. No. 7 Mrs. A. Droeger, topped salt 4,577 feet. Total depth 7,005 feet in salt, abandoned.

Wharton County

Withers field: Texas Co. No. 4 Thompson, 5,551 feet, 282 bbls. twelve-sixty-fourths-inch choke. Magnet field: Texas Crusader Oil Co. No. 5 H. C. Cockburn, 5,545 feet, 98 bbls. quarter-inch choke; Humble Oil & Refining Co. No. 4 Cockburn, perforated casing 5,500-10 feet, 12 bbls. three-thirty-seconds inch choke.

MARKET RECORD, ACTIVE OIL STOCKS

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1937 High	1937 Low	Week ending Jan. 8 Sales	Week ending Jan. 8 High	Week ending Jan. 8 Low	Week ending Jan. 8 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
114⅞	51½	3,600	65⅝	57	65⅝	Amerada Corp.	788,675	N.P.	50cQ	10-30-37	$2.00	125½	75	80	48⅛
37	18	6,300	22	20	21⅝	Atlantic Refining	2,664,000	$25	25cQ	12-15-37	1.25	35⅛	26⅝	28	20⅛
43⅜	10⅛	4,500	17¼	14¼	17	Barber Co.	387,149	$10	75c	12-16-37	.50	38½	21	22½	11⅝
35¼	10	19,300	15¼	13	15¼	Barnsdall Oil Co.	2,247,974	$5	25cQ	11-1-37	.80	28¼	14⅛	14⅜	5⅞
17⅞	7	20,700	10⅛	8⅞	10⅛	Consolidated Oil Corp.	13,919,417	N.P.	20cQ	2-15-38	.80	17¼	11½	12¼	6⅛
49	24	9,400	32⅜	28⅜	32⅜	Continental Oil of Delaware	4,682,615	$5	25cQ	12-20-37	1.50	44⅞	28⅛	35	15⅛
17⅝	4¾	14,800	8⅛	6¼	7⅞	Houston Oil (new)	1,098,618	$25	..	10-17-30	...	13⅞	6⅜	7	1⅛
35⅜	14	7,700	21⅞	18¼	21⅞	Mid-Continent Petroleum	1,855,912	$10	$1	21-1-37	1.15	30⅞	17¼	20½	9⅛
34	15	1,000	17	15¼	17	Mission Corporation	1,399,345	N.P.	25c	12-24-37	.45	29⅞	16⅜	17⅜	10⅜
41⅜	17⅝	13,000	20½	18½	20½	National Supply	382,591	$25	$2 pf.‡	12-22-37	....	75½	19⅞	20⅞	9
22⅞	9	13,100	14¼	11⅞	14⅛	Ohio Oil Co.	6,563,377	N.P.	50cSA	12-15-37	.60	18	12⅛	14¼	9⅛
29¾	11¾	500	13¾	12	13¾	Pacific Western Oil	1,000,000	N.P.	65c	12-18-36	.65	23½	11⅜	14	6⅜
17⅛	7	500	8½	8¼	8¼	Pan American Pet. & Trans.	4,702,945	$5	$1*	12-21-37	.60*	20⅝	12¼	21	10⅜
64	30⅛	20,700	42⅜	38	41⅜	Phillips Petroleum	4,449,052	N.P.	75cQ†	12-1-37	2.50	52⅜	38⅛	40	13⅜
29⅞	13	4,500	18½	17	18½	Plymouth Oil Co.	1,050,000	$5	35cQ	9-30-37	.90	27⅜	11⅞	13	6½
24⅜	8¾	27,400	12¾	11	12⅝	Pure Oil Co.	3,281,120	N.P.	25c	12-1-37	....	24⅞	16	17	5⅞
6½	4⅛	13,800	7¼	5⅜	7¼	Richfield Oil Corp.	3,986,638	N.P.	25c	12-24-37	....	..	..	..	..
54⅛	16	4,900	24	20	24	Seaboard Oil of Delaware	1,224,283	N.P.	25cQ	9-15-37	1.00	44	30½	36⅞	20⅜
34¾	14⅞	4,400	17⅜	16¼	17⅝	Shell Union Oil	13,070,625	N.P.	50c	12-20-37	.25	28¼	14¾	16½	5½
60⅝	26½	2,300	33	28	32½	Skelly Oil	1,006,348	$15	50c	9-30-37	..	47⅝	19½	20½	6⅛
23¼	13	50,300	15¾	14⅝	15⅝	Socony-Vacuum	31,151,071	$15	30c	12-15-37	.70	17½	12½	15⅜	10⅝
50	27⅛	14,100	32¼	28⅝	32	Standard Oil of California	13,014,754	N.P.	80cQ†	12-15-37	1.20	47⅝	35	41⅛	27⅝
50	26½	13,200	35½	33⅛	35	Standard Oil (Indiana)	15,196,241	$25	$1Q†	12-15-37	2.40	48½	32¾	33⅜	23
43	30⅝	No sales	..	..	..	Standard Oil of Kansas	134,841	$10	$5	12-20-37	1.00	31	25	32	20
76	42	35,300	50½	44½	50⅜	Standard Oil of New Jersey	25,856,081	$25	$1.25SA†	12-15-37	2.00	70⅜	51⅛	52⅜	35⅜
77½	44½	200	50¼	50⅛	50¼	Sun Oil	2,156,825	N.P.	25cQ	9-15-37	$1 & 6% Stk.	91	70	77	60½
7¾	1½	5,500	2⅞	2½	2⅞	Superior Oil Corp.	1,388,079	$1	....	....	....	6¾	3	3½	1⅝
65⅛	34¾	41,700	43⅜	38	43⅜	Texas Corp.	10,896,858	$25	50cQ	1-2-38	1.50	55¼	28⅞	30¼	16½
9⅝	2	10,800	4¾	3⅝	4¾	Texas Gulf Producing Co.	888,134	N.P.	10c	12-23-37	.05	8⅞	4⅜	4⅜	2½
16⅝	5⅜	8,900	9¼	7⅜	9¼	Texas Pacific Coal & Oil	888,237	$10	10c	12-1-37	.25	15¼	7½	9¼	3¼
21⅝	13⅛	12,200	15½	14	14⅞	Tide Water Associated	6,288,512	N.P.	15c Spl.	12-17-37	.70	21⅜	14⅜	15⅞	7⅝
28¼	17½	3,300	21	18½	20⅝	Union Oil of California	4,386,070	$25	55cQ†	11-10-37	1.00	28½	20⅜	24	14⅜
31½	22	600	22½	22⅛	22½	Union Tank Car Co.	1,200,000	N.P.	40cQ	12-1-37	1.20	31⅝	22⅝	26½	20⅞
6¼	1¾	200	2⅜	2¼	2⅜	Wilcox Oil & Gas	424,839	$5	....	5-10-28	..	5¼	2⅝	3⅛	1

*Payable in 3⅛% notes. †Includes extras. ‡One-tenth share $2 preferred stock.

New York Curb Exchange

1937 High	1937 Low	Week ending Jan. 8 Sales	Week ending Jan. 8 High	Week ending Jan. 8 Low	Week ending Jan. 8 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
10	6⅝	3,700	9	8	9	American Republics Corp.	1,308,049	$10	30c	12-27-37	....	..	..	..	..
21⅜	7	2,000	10	8⅝	10	Bridgeport Machine Co.	260,000	N.P.	1.25	12-30-37	$1.00	21	13¼	14⅛	3⅜
51½	36	350	39	37½	38	Buckeye Pipe Line Co.	200,000	$50	75cQ	12-15-37	3.25	50	39¾	42½	30¼
123	95½	150	100	100	100	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	9-30-37	7.00	124¾	105	157	115
5⅜	1½	22,300	2	1⅞	2	Cities Service	37,804,394	N.P.	....	6-1-32	....	7⅜	3	3¼	⅜
5½	1½	1,700	2¼	1⅞	2¼	Cosden Petroleum	399,687	$1	....	.....	....	4½	1½	1½	¼
38¾	20¼	6,700	27	23¼	27	Creole Petroleum	6,974,356	$5	50cSA†	12-15-37	.50	39	19⅞	23¾	10
18⅝	6½	1,000	8¾	7	8½	Darby Petroleum	351,390	$5	25cSA	1-15-38	.50	18⅛	9	8⅜	4
8⅜	2¼	700	3½	3¼	3¼	Derby Oil & Refining	263,162	N.P.	....	.....	....	6⅜	1⅞	2	⅜
47½	24½	No sales	..	..	..	Eureka Pipe Line	50,000	$50	$1Q	11-1-37	4.00	47½	38½	38	33¼
63½	33	9,400	41	37½	39¾	Gulf Oil Corp.	9,076,202	$25	25cQ	12-1-37	1.50, 100% Stk.	59	36	74¾	50¼
87	54⅞	5,100	66	64½	65	Humble Oil & Refining	8,923,935	N.P.	62½cQ	12-27-37	1.50	80	57	64	44
24¼	14½	2,500	18¼	17⅞	18⅛	Imperial Oil of Canada	26,919,871	N.P.	62½cSA†‡	12-1-37	1.25	24½	19¾	22½	15⅝
15	5⅞	300	7½	7¼	7¼	Indiana Pipe Line	300,000	$10	50cSA	11-15-37	.80	9¾	5½	6⅛	3⅝
39½	23½	4,600	30⅛	28½	30⅛	International Petroleum	14,247,088	N.P.	$1.25†‡	12-1-37	2.50	39⅝	32⅝	39¾	28
8¾	2⅜	4,300	4	3¼	4	Kirby Petroleum Co.	500,000	$1	10c	9-15-37	.20	5¾	2⅝	3	1⅞
34	12½	13,800	24⅜	18¾	21¼	Lion Oil Refining	270,000	N.P.	50cQ†	12-24-37	.75	17¾	7⅝	8⅛	3½
14¼	5¼	1,500	7¾	7⅛	7¾	Lone Star Gas	5,382,723	N.P.	20c	12-22-37	.60	14¼	9⅞	10⅞	4½
15¼	6¾	4,700	9	8⅛	9	Louisiana Land & Exp.	3,000,000	N.P.	20cQ†	12-15-37	.50	15⅜	9⅞	11⅜	4⅜
14⅝	6¼	700	7⅜	7¼	7⅜	Midwest Oil Co.	998,444	$10	50c	12-15-37	....	....	..	..	..
7⅞	4⅛	1,400	5	4⅝	5	Mountain Producers	1,682,182	$10	30cSA	12-15-37	.60	8⅜	5	5⅝	4⅛
19½	12	No sales	..	..	..	National Fuel Gas	3,810,183	N.P.	25cQ	1-15-38	1.00	23	17⅜	20	11⅝
12½	7¼	600	9¼	8	9¼	National Transit	509,000	$12.50	55cSA	12-15-37	.75	15⅜	9¼	10⅝	6⅝
5	1⅛	1,700	2⅝	1⅜	2⅜	New Mexico and Arizona	1,000,000	$1	1c	12-1-36	.01	6⅝	1⅝	2⅛	1
5⅜	3⅞	100	4½	4½	4½	New York Transit	100,000	$5	60c Spl.	12-28-37	.35	6¼	4¼	4⅞	3
12¾	5¾	No sales	..	..	..	Northern Pipe Line	120,000	$10	25cSA	12-1-37	.40	9¾	4⅞	8	5⅛
9⅝	2¾	43,100	6½	5½	6½	Pantepec Oil	1,608,700	N.P.	....	.....	....	10⅛	3¼	4⅜	1⅛
13⅜	2	1,700	3⅜	3	3⅜	Root Petroleum Co.	336,045	$1	25c	2-1-37	.50	19¼	4½	5	1½
6½	2¼	1,500	3½	3⅛	3½	Ryan Consolidated	296,931	N.P.	....	....	..	4¾	1⅞	2½	⅝
7¼	3⅞	100	4⅜	4⅜	4⅜	Southern Pipe Line	100,000	$10	25cSA	9-1-37	.25	7⅞	3¼	5	3⅞
56	35	1,000	38½	38	38¼	South Penn Oil	1,000,000	$25	$1.15Q†	12-28-37	2.60	44	32½	34½	21⅝
42	20	No sales	..	..	..	South West Penna. Pine Lines	35,000	$50	50cQ	12-31-37	13.00	60	44	56	44¼
21⅛	14¾	1,200	17⅞	17	17⅝	Standard Oil of Kentucky	2,604,790	$10	40cQ†	9-15-37	1.35	23⅜	17⅛	24	18
13¾	8	No sales	..	..	..	Standard Oil of Nebraska	188,403	$25	25c	3-29-37	.25	14⅝	11	12	7⅝
45	16	500	21	19⅜	21	Standard Oil of Ohio	753,740	$25	75cQ†	12-15-37	2.00	40	21⅝	23⅝	11⅛
4⅞	2	2,400	3	2⅞	3	Sunray Oil	1,910,119	$1	10c	12-24-37	.10	5	2⅝	2⅞	⅞
7⅝	2	1,000	4⅜	4	4⅜	Texon Oil & Land	336,028	$2	15cQ	1-3-38	.60	9⅜	5⅜	6⅞	5
13⅝	3	16,300	5	4¼	5	United Gas Corp.	7,818,959	$1	10c	9-15-37	.20	10¾	4	4⅞	⅞

†Includes extras. ‡Payable in Canadian funds.

Note—In comparing highs and lows for the several years in the two tables, it will be necessary to take into consideration cases where there have been stock split-ups.

PERSONAL

CHARLES P. PREWETT, superintendent for the Golden Bear Oil Company, in Bakersfield, Calif., was made a vice president of the company at a recent directors' meeting. S. R. ROSEBERG was made chairman of the board; J. M. FELDMAN, president; L. L. SWARTHE, secretary and treasurer.

SOCRATES BROULLON and FRANCISCO RAPPALLINE, petroleum engineers in the employ of Y.P.F. (Argentine Government Oilfields), are on a tour of the United States. After landing in New York they went directly to California, where they will remain several months. On their first field trip they studied deep drilling methods and equipment at Kettleman Hills and at the new Rio Bravo field in the San Joaquin Valley.

H. S. AUSTIN, manager of the Standard Oil Company of New Jersey's oil pipe line department, was in Washington, D. C., on business last week.

KEN REAGAN, vice president of the Salt Dome Oil Corporation, Houston, Tex., and MRS. REAGAN, have returned from a trip to Monterrey, Mexico, where they spent the holidays.

W. J. HELD has been transferred from the sales development department of the Standard Oil Company of California to the staff of P. H. PATCHIN, director of the company.

HARRY LEYENDECKER, chief scout for the Tide Water Associated Oil Company, Houston, Tex., has returned to his desk after a two weeks' vacation spent hunting and fishing along the Gulf Coast.

JAMES FOLEY, formerly Rocky Mountain divisional engineer for the Texas Company, has been transferred to the Bahrein Petroleum Company, Ltd., and will be assigned to duty on Bahrein Island.

FRED BRASTED has been appointed assistant land man in the West Texas district, with headquarters in Midland, Tex., for the Phillips Petroleum Company, moving there from Abilene, Tex.

JOHN P. ROBERTS resigned as assistant director of the oil and gas conservation division of the Kansas Corporation Commission, to become assistant managing director of the recently formed Kansas Independent Oil and Gas Association, it was announced this week by E. G. DAHLGREN, conservation director for the commission. Mr. Dahlgren said Mr. Roberts had agreed to continue his state duties until a successor is selected.

JOHN ANDERSON, formerly with the U. S. Geological Survey in Bakersfield, Calif., has moved to Stockdale, that state, and organized the Chico-Martinez Oil Company to drill a well near Belridge.

DR. HENRY V. HOWE, director of the School of Geology at Louisiana State University, addressed the Shreveport Geological Society last week, recounting, with illustrations, his recent geological field trips through the U.S.S.R.

JOHN W. POOLE, consulting petroleum chemist of New York, will address the Western Petroleum Refiners Association's Ark-La-Tex division at its monthly meeting in El Dorado, Ark., Friday evening of this week. His topic will be "Results of Solvent Extraction of Lubricating Oils."

DR. M. G. EDWARDS has been made chief geologist in the San Joaquin Valley for the Shell Oil Company. He replaces DR. F. S. HUDSON, who has been transferred to the Los Angeles headquarters.

GEORGE C. CLAMP, superintendent in charge of the American Exploration Company's wildcat work in Illinois, made a recent visit by plane to Bakersfield and other California points. Rain has delayed operations of his company where it is moving in rotary equipment 3 miles northwest of Noble in Richland County, Illinois.

PHILIP H. PATCHIN, director of the Standard Oil Company of California, has been made a member of the board of management of the 1939 Golden Gate Exposition in San Francisco. Mr. Patchin will become chairman of the exposition's finance committee to fill the position left vacant by the late KENNETH R. KINGSBURY, former president of the Standard Oil Company of California.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

The North Texas Oil Men's Association elects a board of directors comprising C. E. Menzie, L. C. Hivick, Louis Campbell, J. E. Head, G. C. Woods, W. G. Skelly, J. C. Strauss, W. B. Corlett and W. W. Silk. Mr. Menzie is chosen as president.

Although it has been years since there has been any trading on the Oil City Oil, Grain and Stock Exchange in Oil City, Pa., the charter is kept alive. E. V. D. Selden was recently elected president and a board of directors chosen.

The present Pennsylvania Grade crude oil price, $2 per barrel, is the highest since 1877, when it reached $3.71¼ but closed the year at $1.61⅞. The average production in the United States in 1877 was 36,050 barrels, practically all of it Pennsylvania Grade crude.

20 YEARS AGO

Mark Requa, of Oakland, Calif., oil executive and mining engineer, is chosen oil administrator, a war measure, and oil men are eager to know what his duties are to be.

Prairie Oil & Gas Company, of Independence, Kans., has been granted a permit to do business in Texas.

Hope Natural Gas Company breaks all deep drilling records with its test in Harrison County, West Virginia, which is drilling at 7,260 feet in an 8-inch hole. It will continue downward until some unsurmountable obstacle causes a stoppage.

10 YEARS AGO

The Federal Oil Conservation Board warns against "present wasteful methods of capturing our oil deposits" which it characterizes as alarming. The board is preparing a voluminous report on the state of the oil industry.

Elmer E. Smathers, multimillionaire oil operator, real estate owner and oil field supply manufacturer, whose home was in Port Chester, N. Y., dies in Los Angeles, Calif.

Thomas B. Slick, a leading individual oil producer in the Mid-Continent, advocates the development of oil properties on a basis of one well to each 40 acres, and cooperation among producers in a pool to conserve oil.

O. L. O'DALE, district field engineer for the Shell Oil Company in Bakersfield, Calif., has left for a three weeks' business visit to Houston, Tex.

JOHN B. MERRITT, superintendent for the Honolulu Oil Corporation, has returned to his office in Taft, Calif., after several months spent in Texas.

GUS DOLL is now president of Valvoline Oil Company of Cincinnati, Ohio, succeeding HOWARD EDWARDS, now vice chairman of the board. E. W. EDWARDS is chairman.

JAKE L. HAMON, president of the Dallas (Tex.) Petroleum Club, announces that the annual party of the club will be held January 22. "It will eclipse all previous affairs," Mr. Hamon writes.

JAMES E. DUFFEY, 73, pioneer oil operator of Tulsa, was in a critical condition this week from injuries suffered last Saturday, when he was struck by a fire department car speeding through a downtown street. A leg was amputated in a Tulsa hospital, and two blood transfusions were administered.

C. R. PATTERSON, district manager of the National Supply Company, Houston, Tex., has been appointed secretary and treasurer of the Gulf Coast chapter of the American Petroleum Institute division of production, filling the vacancy caused by the recent death of Carl Hickman.

W. C. CHONETTE, formerly division exploitation engineer at Long Beach, Calif., for the Shell Oil Company, has been made division exploitation engineer for the San Joaquin Valley, with headquarters in Bakersfield. R. C. McCURDY, who was acting exploitation engineer in Bakersfield, is on his way to The Hague, Holland, for a year's stay.

PARAGRAPHS

J. S. HUDNALL, of Tyler; MAYOR ROY LAIRD, of Kilgore; TOM POLLARD, of Tyler; ROY LEFFINGWELL, of Gladewater, and J. J. THOMAS, of Longview, were named committeemen to arrange for the field-wide East Texas celebration January 15.

W. H. WHITEFORD, executive vice president of the British American Oil Producing Company, Tulsa, and H. C. ARNOLD, manager of the land and geological department, were in Wichita Falls, Tex., last week. They inspected the K.M.A. field, which they said "looked like a big one."

R. C. STONER, general manager of the Standard Oil Company of California's producing department, was elected a director last Saturday, filling a vacancy created by the death of K. R. Kingsbury in November, 1937. The board of directors elected M. E. LOMBARDI a vice president. Mr. Lombardi has been a member of the board since 1927.

CHARLES CROSBY, drilling foreman for the Texas Company at Taft, Calif., has been confined to his home for two weeks by illness.

E. E. OVERTON, formerly in charge of the bulk and commercial accounts for the Shell Eastern Petroleum Products, Inc., has opened an independent oil brokerage office in Rockefeller Center, New York.

A. J. BRODERICK, of Broderick & Calvert, Fort Worth, Tex., oil producing firm, is on a vacation in Miami, Fla. His partner, GEORGE CALVERT, has been on his annual hunting trip in South Texas.

THOMAS BELL, for some time associated with the Doheny interests in various positions, is returning to Los Angeles from an assignment in Portugese East Africa because of severe wounds which he suffered when he was clawed by a wounded leopard.

DEAN A. McGEE, vice president of Kerlyn Oil Company, and former chief geologist of Phillips Petroleum Company, delivered a series of four lectures on petroleum geology January 4 to 7 to students and faculty members of the University of Kansas. The talks were sponsored by the department of geology.

LEO R. BRAMMER, sales manager of Danciger Oil & Refineries, Inc., Tulsa, suffered severe shock and bruises in an automobile crash near Dallas, Tex., Monday of this week, and MRS. BRAMMER, in the seat with him, was killed almost instantly. Mr. Brammer was on a business trip to Texas points when his car was struck by another. After receiving attention in a Dallas hospital he was able to go home by train. MRS. BRADLEY MURRAY, daughter-in-law of MRS. A. DANCIGER, wife of the company vice president and in the car with Mr. and Mrs. Brammer, was not seriously hurt.

CHARLES GILL MORGAN, vice president of the United Geophysical Company of Pasadena, Calif., left Los Angeles January 6 by plane for South America. He will return to the states in about six weeks.

RICHARD S. TURNER, export manager of the Tide Water Associated Oil Company, San Francisco, Calif., was reelected president of the Foreign Trade Association of San Francisco last week. This will be Mr. Turner's third successive year as president of that organization. Plans for the future include the staging of the National Foreign Trade Convention in San Francisco in November of this year and active participation in the foreign trade phases of the 1939 Golden Gate International Exposition.

J. R. WHITTENBURG, formerly superintendent for the Burma Oil Company in India, has returned to Bakersfield, Calif., where he will enter business.

FURMAN H. UPDIKE has been made inspector for the California State Division of Oil and Gas in Bakersfield. Mr. Updike, formerly in the Los Angeles office, is replacing RALPH FRAME, whose headquarters will be in the Los Angeles office.

MERRILL W. BLAIR, oil operator in Wichita Falls, Tex., has been named chairman of arrangements for the annual banquet of the North Texas Oil and Gas Association, to be held in that city February 26. D. H. BOLIN, also of Wichita Falls, is chairman of the nominating committee for new directors of the association.

Now Heads Legal Staff

Thirteen years has seen Don Emery advance from a newcomer on the legal staff of the Phillips Petroleum Company to head of the department. The year after he joined the company he was placed in charge of the department's Texas division, with headquarters in Amarillo. The division staff included five lawyers besides himself. On January 1, 1937, Mr. Emery was elected vice president and assistant general counsel and was transferred to the company's main offices in Bartlesville, Okla. Exactly one year later—January 1, 1938—he became general counsel upon the retirement of John H. Kane.

DON EMERY

Henderson Donaldson Emery (he likes shortcuts, so he slashed it to Don Emery) was born in Delmont, Pa., 44 years ago. The family soon afterward moved to Butler, Pa. After graduating from the Butler High School young Don attended Allegheny College, Meadville, Pa., two years. Moving then to Oklahoma, he graduated from the University of Oklahoma. Three years in its law school followed, with graduation and his LL.B. Incidentally he was awarded membership in the Order of Coif, a distinction in the legal world. He practiced law five years in McAlester, Okla., before entering Phillips service.

Mr. Emery is a captain of infantry in the Officers Reserve Corps, a Mason and a Shriner. He is a member of Delta Tau Delta and Phi Delta Phi. He gets fun out of fishing and golf. He married Miss Hazel Maxey, of Blanchard, Okla., and they have three children.

W. M. STRATFORD, vice president of the Texaco Development Company, left New York January 4 for a trip to Italy and Germany.

JOHN K. DORRANCE, independent operator, of Houston, Tex., has returned home following a holiday trip with his family to Mexico City, Mexico.

W. A. NEWHOFF, formerly manager of refined oil sales for the Union Oil Company of California, Los Angeles, has been made assistant director of sales.

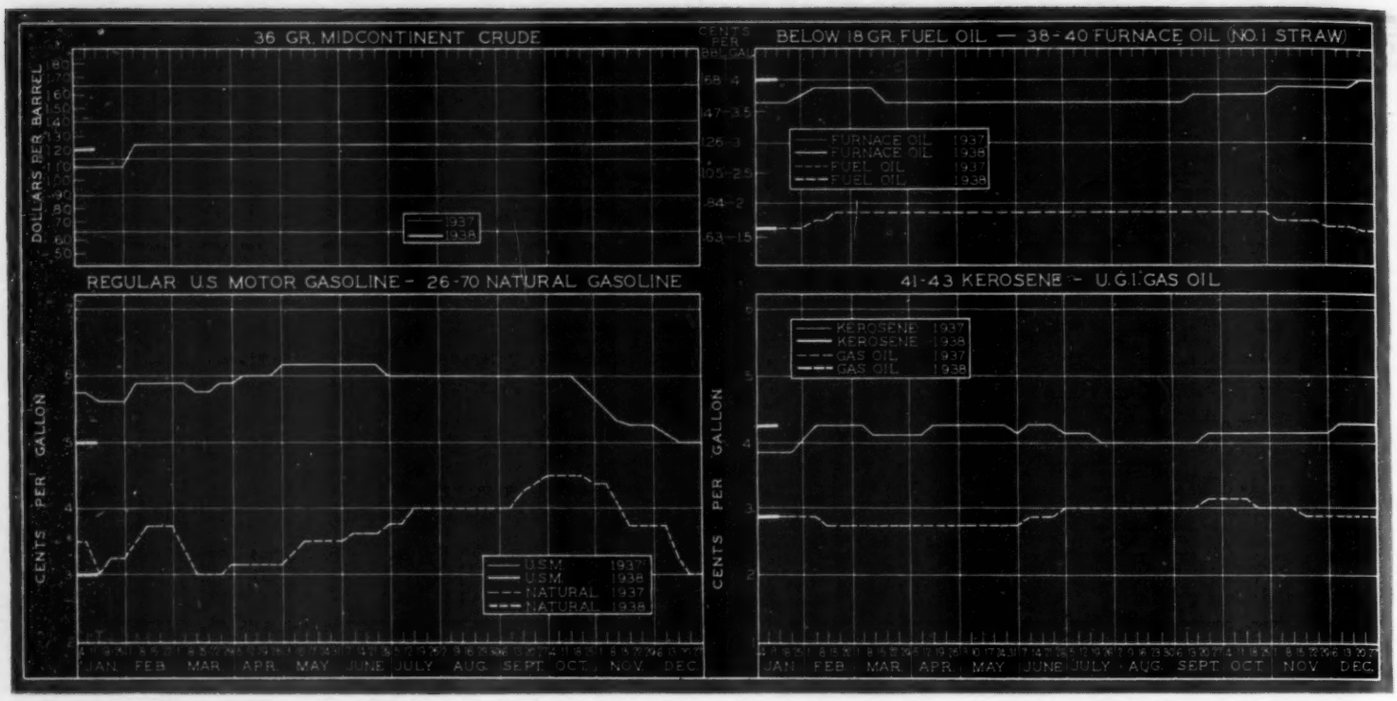
KARL F. HASSELMAN, president of the Salt Dome Oil Corporation, Houston, Tex., has returned to his office from a trip of several weeks to Lake Placid, N. Y.

W. T. WALLACE, vice president of the Mene Grande Oil Company, Venezuelan subsidiary of the Gulf Oil Corporation, was injured by a fall in New York last week and is recovering at his home.

H. B. SMITH, head of the Sinclair Prairie Oil Company land department, has opened temporary headquarters at the Kemp Hotel in Wichita Falls, Tex., during the K.M.A. boom.

WALLACE THOMPSON, geologist with the General Crude Oil Company, presented a geological cross-section of the Texas Gulf Coast at the regular meeting of the Houston Geological Society last week.

COL. W. T. KNIGHT, Wichita Falls, Tex., operator, and MISS ERIE WILSON WARD, also of that city, were married recently in Dallas, Tex. GOVERNOR JAMES V. ALLRED of Texas acted as best man, and GOVERNOR TELLER AMMONS of Colorado escorted the bride to the altar. Colonel and Mrs. Knight left on a wedding trip to Miami, Fla.



Representative Mid-Continent Quotations on Crude Oil and Refined Products. Basis Oklahoma (Group 3)

Immense Additions to Gasoline Stocks Take Life Out of Group 3 Market

By T. F. SMILEY

Mildly encouraging signs appeared in some divisions of the Group 3 market this week, but refiners couldn't wring much satisfaction out of them as they gazed at staggering additions to the country's gasoline inventories. Sales managers reported a moderate rise in spot movement of motor fuel, and light burning oils were getting tighter; but anxious interest centered on the 2,854,000 bbls. of gasoline poured on top of bursting storage in the week ending January 1, with runs to stills continuing to climb.

The modest upturn in gasoline sales was not of such a character as to indicate jobbers were bent on filling their tanks at the bargain prices now prevailing. It seemed more likely they simply were building their supplies to the point needed to meet current demand after having allowed them to drop below proper working levels at the close of the year. Unexpectedly favorable motoring weather is reported from various areas, and this has helped substantially in making good gallonage records. It is not regarded as likely that there will be much buying for spring business till late February or early March.

Stocks 23 Per Cent Higher

The trade is frankly uneasy over the huge accumulations of gasoline. Total stocks are about 23 per cent higher than those reported at the opening of 1937. Refiners entered last summer with overheavy stocks. The commonly expressed view was that the vacation season would remove all surplus. But it didn't. There is no assurance that the peak demand of 1938 will be any better than that of 1937, or even that it will be as good. In any event the problem of how to dispose of the ocean of gasoline going to storage is not conducive to sound sleep.

The suggestion that export business may solve the puzzle is heard occasionally. What a slender hope lies in that direction becomes apparent when it is considered that the ordinary cargo consists of about 75,000 bbls. Thus, even 10 spot cargoes would take only 750,000 bbls. And if the shipments were spread over six weeks this oversea business would remove only 125,000 bbls. a week. No one denies the cure is a sharp reduction in refinery runs, but there is a reluctance on the part of many refiners to take the initiative if doing so means turning orders for burning oils over to a competitor.

Refined Oil Market Barometer

Gasoline consumption, favored by weather conditions, maintaining high level, but fails to impart life to tankcar market, largely because of the huge increases in the nation's stocks. Domestic heating oils are in brisk demand, with predictions of actual shortage in case of a severe winter. Export demand is helping to move overheavy stocks of lubricating oils.

MID-CONTINENT. Gasoline weak. Light heating oils strong. Natural gasoline fairly steady.

EAST COAST. Kerosene and heating oils off owing to mild weather.

GULF COAST. Kerosene and heating oils easier. Gasoline unchanged. Prices steady.

CALIFORNIA. Gasoline easier. General market inactive and tending to softness.

PENNSYLVANIA. Gasoline slow. Wax off. Rest of market unchanged.

CHICAGO. Gasoline irregular. Heating oils strong. Kerosene vigorous. Heavy fuels dull.

Naturals Holding Fairly Well

Natural gasoline was holding up better than manufacturers themselves had expected it to. If some field stocks were growing uncomfortably large, they evidently had not yet assumed the character of distress material, for there were no reports of price-shading. Jobber buying was still in fair volume, and several foreign inquiries were received, some for cargo and some for part cargo shipments, for delivery in February or the latter part of the present month.

More refinery buying at home was declared to be necessary if the natural gasoline market is to be kept at its present level. It was pointed out incidentally that any pronounced weakness in high-octane stabilized grades of natural would be reflected in the refined market, since direct competition would become more emphatic.

Cold weather stiffened the demand for light heating oils, which already were scarce. Evidence that various large refiners were cutting their runs was seen in the fact that they were buying furnace oils to take care of orders which they could not fill from their own tanks. Scarcity of some grades, particularly No. 1 prime white and No. 2 straw, was so marked that it was asserted a spell of severe weather would be likely to cause actual shortage.

Heavy residual oils were inactive. U.G.I. gas oil was dull. White crude scale was obtainable at lower quotations. The lubricants were lifeless.

Cross-Currents Are Swaying Products in the Eastern Coast Markets

By H. STANLEY NORMAN

NEW YORK, Jan. 11.—General tone of petroleum markets in the northeastern section of the country picked up somewhat during the first week of 1938, but cross-currents continued to sway the individual products along much the same course as that inscribed by the thermometer. Almost complete absence of cold weather in the east central section, by far the largest consuming area in the country of burning oils, has so far produced disappointing winter business.

Diesel fuel oil was reduced 10 cents per barrel and most grades of burning oil were cut one-quarter of a cent per gallon in terminal and tankcar prices by Standard Oil Co. of New Jersey January 10 with the new quotations retroactive to January 1. Diesel oil is quoted at $2.10 per barrel at New York, Baltimore, Norfolk, Charleston and Wilmington, a uniform reduction of 10 cents per barrel. Kerosene was cut to 6 cents per gallon at terminals and in tankcars, and the Nos. 3 and 4 heating oils, along with industrial fuel, distillate fuel oil and gas oil, were lowered to 5 cents per gallon. The reduction was due, according to a company statement, to accumulation of stocks caused by mild weather.

Probably the most encouraging turn of the week in this section was a slightly higher demand for heavy fuel oil despite reports from the Gulf Coast that two or three cargoes of bunker C fuel had been loaded there for 80 cents per barrel, a decrease of 5 cents in the previous market. Most of the increased consumption was moving to facilities of shore plants and the turn is probably reflective of a slight improvement in manufacturing schedules. Along the North Atlantic Seaboard, the bunker C fuel oil price of $1.25 per barrel prevailing through the last two months of 1937 continued on a firm basis and there was no development during the past week to indicate an early change. While the mild winter weather prevailing so far south of the New England states has contributed to disappointing domestic heating fuel oil movement, it is correspondingly true that temperatures and lack of snow have held motor vehicle operation and gasoline consumption at levels higher than normally expected. The tankcar market of 7 to 7¼ cents per gallon for 65 octane motor fuel in the New York and New Jersey districts remained unchanged last week. Retail markets are reasonably settled with only a few isolated instances of price cutting at the pumps.

Motor vehicle registrations in New York state are considerably ahead of their 1937 total for the early days of January and the year just ended accounted for record breaking utilization of traffic arteries to and from New York City. Gasoline marketers in this section of the country place considerable faith in the number of vehicles using the Holland Tunnel, the George Washington Bridge and the recently completed Lincoln Tunnel as indices of motor travel. The three arteries named constitute the main means of crossing the Hudson River.

Another healthy sign appearing last week was the upward trend of tanker rates from the Gulf Coast and reports that several fixtures had been made at the increased levels for January and February loading. Several boats were chartered last week for movement of reduced crude or fuel oil from the Gulf Coast to North Atlantic ports with rates ranging from 33 to 40 cents per barrel depending on gravity of the products loaded. One tanker was chartered for February lifting of a gasoline cargo at 37 cents per barrel which is probably typical of the boat market currently existing.

Current trends in operating practice indicate that the tanker market will be subject to less violent fluctuations as times goes on and this may have the effect of spreading buying and delivery instructions to refiners over more level ground. Oil companies are inclining to the practice of providing adequate storage at points of concentrated consumption which in many instances are remotely located with reference to refining facilities. To guard against interruption of supplies in the event of labor disputes is the chief objective. Efforts probably will be made to maintain storage at near its capacity at all times and in this fashion the peaks and valleys of the transportation departments will be leveled off. Business will still depend somewhat on seasonal changes, but the abrupt drops and rises in tanker markets probably will be eased to some extent.

With more stable tanker markets, the incentive to withhold purchases on the Gulf Coast or other points of supply until the water rates reach bottom will be minimized on the part of traders and distributors and thus perhaps will contribute to more constant movement of products from the stills to the consumer. These factors are relatively unimportant in the case of companies with vast storage facilities at their refineries, but the seasonal slumps are matters of major concern to the small plant operators who exert much influence on the open market.

Kerosene trading activity in the northeast has diminished somewhat during the past two or three weeks, but the general market of 6¼ cents per gallon is ruling fairly steady. Part of the reduced trading rate is due to extremely heavy buying during November and December and failure of the season to produce the extreme temperatures anticipated. The inland Pennsylvania market is well maintained on kerosene.

Continuation of war preparedness purchasing by exporters on the Gulf Coast and at northern ports was reported last week, particularly in lubricating oils. Two cargoes of bright stock were reported sold on the Gulf Coast at the prevailing price. Demand for cylinder oils in the Pennsylvania refining district was also reported improved over conditions prevailing during late December.

Neutral oils are weak with demand at low ebb and several suppliers reported offering stocks at concession prices, although a majority of the available material is held at previously quoted prices. Suppliers anticipate that this material will also experience a revival of interest by the end of January or middle of February.

The 65 octane gasoline in hands of western Pennsylvania refiners was lowered about one-quarter of a cent per gallon last week in quotations to most inquirers, but this concession failed to attract any spirited buying. Light grades of fuel oil and kerosene maintained their strong position of the preceding week. Lower octane gasoline is sluggish with considerable material available at low of the market range, 4¾ cents per gallon.

Fear that the crude oil price will

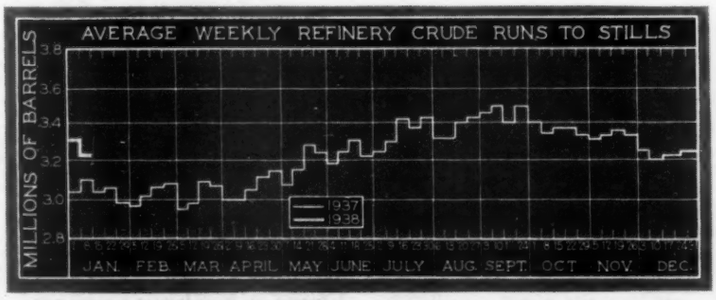
(Continued on Page 104)

A. P. I. Weekly Refinery Statistics

Week Ending January 8, 1938

	Capacity reporting (per cent)	Daily crude runs (bbls.)	Total gasoline stocks	Gas oil and fuel oil stocks
East Coast	100.0	525,000	†18,819,000	12,284,000
Appalachian	88.4	100,000	3,114,000	1,164,000
Indiana, Illinois and Kentucky	92.4	402,000	12,659,000	6,931,000
Oklahoma, Kansas and Missouri	84.7	253,000	6,791,000	3,664,000
Inland Texas	56.6	136,000	2,548,000	1,720,000
Texas Gulf	95.7	735,000	11,521,000	11,299,000
Louisiana Gulf	96.6	124,000	2,699,000	3,454,000
North Louisiana and Arkansas	63.7	34,000	397,000	474,000
Rocky Mountains	69.7	41,000	1,755,000	662,000
California	90.9	542,000	14,538,000	74,694,000
Total reported	89.0	2,892,000	74,841,000	116,346,000
Estimated unreported	.....	318,000	4,490,000	2,800,000
*Estimated total	.....	3,210,000	79,331,000	119,146,000
*Estimated total previous week	.....	3,320,000	†77,429,000	118,660,000
*January 9, 1937	.....	3,110,000	65,402,000	105,971,000

*Bureau of Mines, currently estimated. †Revised.



Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ending December 25, 1937	303,294,000 barrels
Week ending December 18, 1937	303,041,000 barrels
Week ending December 26, 1936	288,230,000 barrels

RETAIL OIL MARKETS

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of January 11, 1938

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and cit,/ taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank wag.
Chicago, Ill.	15.3	13 3	4 0	10 2
Decatur	15 3	13 8	4 0	10 2
Joliet	15 3	13 8	4 0	10 2
Peoria	15 3	13 8	4 0	10 2
Quincy	15 1	13 6	4 0	10 0
Davenport, Ia.	15 3	13 8	4 0	‡13 2
Des Moines	15 1	13 6	4 0	‡11 0
Mason City	15 4	13 9	4 0	‡13 3
Sioux City	15 3	13 8	4 0	‡13 2
Duluth, Minn.	17 0	15 5	5 0	10 9
Mankato	16 7	15 2	5 0	9 5
Minneapolis	16 7	15 2	5 0	10 6
Lacrosse, Wis	16 7	15 2	5 0	10 6
Green Bay	17 0	15 5	5 0	10 9
Milwaukee	16 5	15 0	5 0	10 4
Detroit, Mich.	15 1	13 6	4 0	9 8
Grand Rapids	16 3	14 8	4 0	11 0
Saginaw	16 1	14 6	4 0	9 1
Evansville, Ind.	16 8	15 3	5 0	†10 7
Indianapolis	16 9	15 4	5 0	†10 8
South Bend	17 2	15 7	5 0	†10 2
Fargo, N. Dak.	16 7	15 2	4 0	11 6
Minot	17 9	16 4	4 0	12 8
Huron, S. Dak.	17 1	15 6	5 0	11 0
Kans. City, Mo.*	14 6	13 1	4 0	8 5
St. Louis*	14 9	13 4	4 0	9 8
St. Joseph	14 6	11 4	4 0	9 0
Wichita, Kans.	14 1	12 4	4 0	8 5

*State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Iowa kerosene prices include 3-cent state tax.

(Exclusive of state general sales taxes, except Indiana and South Dakota.)

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective Dec. 7, 1936, f.o.b. Chicago tank-wagon prices: Range oil, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents, 150 gallons and over, 7.3 cents. Stanolex No. 1, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex furnace oil, 1-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex A, 1-399 gallons, 5.75 cents; 400 gallons and over, 4.75 cents. Stanolex B, 1-799 gallons, 5.75 cents; 800 gallons and over, 4.75 cents.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Tank wag. dlr.	Gasoline Tank car con'r.	Gasoline Inc. tax	Kero. tank wag.
Atl'tic City, N. J.	12.75	11.25	4.0	9.0
Newark	12.75	11.25	4.0	9 0
Annapolis, Md.	14 85	13 35	5 0	9 5
Baltimore	14.25	12.75	5 0	9.0
Cumberland	16.65	14.15	5.0	10.0
Wash'g'n, D. C.	12.5	11.0	3.0	9.5
Danville, Va.	17.45	14.95	6.0	12.9
Norfolk	16 25	13 75	6.0	11.5
Petersburg	16.55	14.05	6.0	11.7
Richmond	16.55	14.05	6.0	11.7
Roanoke	17.75	15.25	6.0	12.9
Charles'n, W. V.	17.05	14.55	6.0	12.6
Parkersburg	16.35	13.85	6.0	11.2
Wheeling	16 25	14 85	6 0	12 2
Charlotte, N. C.	18.65	16.15	7.0	12.6
Hickory	19.15	16.65	7.0	13.0
Mt. Airy	18.95	16.45	7.0	12 8
Raleigh	18.25	15.75	7.0	12.1
Salisbury	18.75	16.25	7.0	12.7
Charleston, S. C.	17.25	14.75	7.0	11.1
Columbia	18.25	15.75	7 0	12.1
Spartanburg	18.95	16.45	7.0	12.9

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5-cent per gallon.

Effective May 15, 1937, in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax counties): Commercial consumers taking deliveries of 50 gallons (W. Va., 100 gallons) or more at one time will be billed at posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons (W. Va., 100 gallons) will be billed at 4 cents per gallon over posted consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline Tank wag.	Gasoline Net dlr.	Gasoline Inc. tax	Kero tank wag.
Atlanta, Ga.	21 0	18 0	7 0*	†12 0
Augusta	21 0	18 0	7 0	*14 0
Macon	21 0	18 0	7 0	*14.5
Savannah	19 0	16 0	7 0	*12 0
Birm'ham, Ala.	22 0	19 0	8 0	12 6
Mobile	22 0	19 0	9 0	11 0
Montgomery	22.0	19.0	9.0	†13.0
Jackson, Miss.	20 0	17 0	7 0	*13 0
Vicksburg	20 0	17 0	7 0	*13 0
Jacksonville, Fla.	22 0	17 0	8 0	†10 0
Miami	20 5	17 5	8 0	†12 5
Pensacola	22 0	19 0	9 0	12 0
Tampa	20 0	17 0	8 0	10 5
Lexington, Ky.	19 5	16 5	6 0	11 0
Covington	18 5	15 5	6 0	11 0
Louisville	19 0	16 0	6 0	10 5
Paducah	19 5	16 5	6 0	10 0

Price basis to tank-wagon consumers: Effective January 4, 1937, 3 cents per gallon below tank-wagon price. Kerosene prices in all states subject to 2 cents discount except in Kentucky where prices are net.

*Includes 1-cent state tax. †Subject to 2-cent discount.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax; and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Dealer tax	Kero. tank wag.
Denver, Colo.	15 0	5 0	11 5
Grand Junction	19 0	5 0	15.0
Pueblo	16 0	5 0	10 5
Casper, Wyo.	17 0	5 0	11 5
Cheyenne	16 0	5 0	13 0
Butte, Mont.	19 5	6 0	13 5
Billings	19 5	6 0	15 5
Helena	19 5	6 0	15 5
Great Falls	19 5	6 0	15 5
Salt Lake City, Utah	19 5	5 0	16 0
Twin Falls, Ida.	21 0	6 0	18 0
Boise	21 5	6 0	18 0
Albuquerque, N. M.	17 5	*6 5	12 0

*Includes city tax of one-half cent.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Tank wag. con'r.	Gasoline Di- vided dlr.	Gasoline Inc. tax	Kero. tank- wag
Ohio points	16.0	15.00	5 0	*13 5

*Includes state tax of 1 cent.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Tank wag. dlr.	Gasoline Tank car con'r.	Gasoline Inc. tax	Kero. tank- wag
Albany, N. Y.	14.5	12.5	5 0	9 0
*Met. N. Y.:				
M'nh't'n, Br'nx	14 5	12 5	5 0	8 75
Staten Island	14 5	12 5	5 0	8 75
Q'ns. & Brklyn	14 5	12 5	5 0	8 75
Buffalo	14 0	13 04	5 0	7 5
Rochester	15 0	13.17	5 0	8 5
Syracuse	14 5	13 12	5 0	9 0
Boston, Mass.	13 00	11 5	4 0	8 0
Portland, Me.	14 5	12 7	5 0	8 75
Manch'ter, N. H.	15 0	13 0	5 0	9 0
Burlington, Vt.	14 5	12 9	5 0	9 5

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point; monthly purchases under 5,000 gallons, pay divided dealer tank-wagon price at delivery point.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank- wag.
San Francisco	17 5	18 5	4 0	11 5
Los Angeles	17.0	18 0	4 0	10 0
Fresno, Calif.	18.5	19 5	4 0	12 5
Phoenix, Ariz.	21 0	22 0	6 0	‡17 0
Reno, Nev.	20 0	21 0	5 0	13 0
Portland, Ore.	20 0	21 0	6 0	13 5
Seattle, Wash.	20 0	21 0	6 0	13 5
Spokane	22.5	23 5	6 0	16 0
Tacoma	20 0	21 0	6 0	13 5

‡Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. Tc commercial consumers: on tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Gasoline Dlr.	Gasoline Inc. tax	Kero. tank- wag.
Omaha	17 7	16 2	6 0	10 5
McCook	18 4	16 9	6 0	11 2
Norfolk	18 1	16 6	6 0	10 9
North Platte	18 5	17 0	6 0	11 3
Scotts Bluff	19 2	16 0	6 0	12 0

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective Jan. 1, 1935.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Tank wag. dlr.	Gasoline Tank car con'r.	Gasoline Inc. tax	Kero. tank- wag.
N. Orleans, La.	19 75	17 25	*10 0	†12 0
Baton Rouge	17.75	15.25	8.0	12.0
Alexandria	18 25	15 75	8 0	10 5
Lafayette	18.75	16.25	8.0	13.0
Lake Charles	18.75	16.25	8 0	12 5
Shreveport	17.25	14.75	8.0	9.5
Kn'xv'le, Tenn.	20.75	18.25	8.0	14.0
Memphis	18.75	16.25	8.0	12.0
Chattanooga	20.25	17.75	8.0	13 5
Nashville	19.75	17.25	8.0	11.5
Bristol	19.50	18.25	8.0	14.5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery takes posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Louisiana kerosene prices include 1 cent state tax.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline Tank wag. dlr.	Gasoline Tank car con'r.	Gasoline Inc. tax	Kero tank- wag.
Philadelphia, Pa.	13 25	12 25	5 0	10 5
Pittsburgh	15 0	13 0	5 0	11 0
Allentown	14 25	12 75	5 0	11 0
Erie	14 5	13 0	5 0	10 0
Scranton	14 5	13 0	5 0	11 0
Altoona	15 0	13 0	5 0	11 0
Dover, Del.	14 5	....	5 0	11 0
Wilmington	14 0	....	5 0	11.0
Springf'd, Mass.	13.5	....	4 0	8 5
Worcester	14.3	....	4.0	9 0
Hartford, Conn.	13 6	....	4.0	8.5
New Haven	13.5	....	4 0	8 0
Providence, R. I.	13.3	....	4.0	8 5

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Dealer tax	Gasoline Inc. tax	Kero. tank- wag.
Muskogee, Okla.	14.5	5.0	7.0
Oklahoma City	14 0	5 0	8.0
Tulsa	14.0	5.0	8.0
Ft. Smith, Ark.	14 75	5.0	8.0
Little Rock	17.25	7.5	9.8
Texarkana	14.0	5 0	8 5

Texas

	Gasoline Tank wag.	Gasoline Serv. sta.	Gasoline Inc. tax	Kero. tank- wag.
Dallas, Tex.	14.0	18.5	5.0	8.0
Fort Worth	14.0	18.0	5.0	8.0
Houston	14 5	19 0	5 0	8 0
San Antonio	14 5	18 5	5 0	8 0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150 gallon lots if covered by contract.

Canada*

3 Star Imperial Gasoline

IMPERIAL OIL, LTD.

	Tank- wag.	Inc. tax	Kero tank wag.
Halifax, N.S.	24 0	8 0	18 5
St. John, N.B.	24 0	8 0	18 5
Montreal, Que.	21 0	6 0	17.5
Toronto, Ont.	22 0	6 0	17.0
Hamilton, Ont.	22 0	6 0	17.0
Winnipeg, Man.	27 5	7 0	20 7
Brandon, Man.	29 8	7 0	22 *
Regina, Sask.	27.0	7.0	22.0
Saskatoon, Sask.	29 8	7 0	24 8
Edmonton, Alta.	26 5	7.0	21.5
Calgary, Alta.	24.0	7.0	19.0
Vancouver, B.C.	23 0	7 0	23 *

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon price. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Retail Price Changes

Standard Oil Co. (Indiana) January 3 reduced dealer gasoline 1 cent in St. Joseph; December 29 reduced tank-wagon kerosene 2 cents in Des Moines.

Socony-Vacuum Oil Co. Inc. December 23 reduced tank-wagon kerosene .25 cent in metropolitan New York and .5 cent in Syracuse, Boston and Manchester; December 23 reduced dealer gasoline 1 cent in Buffalo, .3 cent in Portland, .8 cent in Manchester and .5 cent in Burlington.

Imperial Oil, Ltd. January 5 reduced tank-wagon gasoline 1.5 cents in Regina, Saskatoon, Edmonton and Calgary; January 5 reduced tank-wagon kerosene in Edmonton and Calgary.

Indiana Advances Prices

Effective January 12 Standard Oil Co. (Indiana) will restore normal markets on kerosene, tractor fuel and Stanolex furnace oil in the states of Illinois, Indiana, Iowa, Minnesota, Missouri, North Dakota, South Dakota and Wisconsin. No change will be made in Chicago.

New York Market

(Continued from Page 103)

recede from present levels is apparently diminishing in New York market circles. Less emphasis seems to have been placed on this possibility during the past week.

The wax market on the Atlantic Coast and inland Pennsylvania declined about one-tenth of a cent per pound last week, but demand is still at a low level. Export orders are continuing unchanged.

PRICES OF REFINED PRODUCTS

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of January 11, 1938

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 oct. and below	.04	.04¼
63-66 octane	.04⅜	.04½
67-69 octane	.04⅝	.04⅞
70-72 octane (regular)	.05	.05¼
60-62 400 grades:		
62 oct. and below	.04	.04¼
63-66 octane	.04⅜	.04½
67-69 octane	.04⅝	.04⅞
70-72 octane (regular)	.05	.05¼
64-66 375	.04½	.04⅝
68-70 360	.04⅞	.05⅛

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.04	.04¼
63-66 octane	.04⅜	.04½
67-69 octane	.04⅝	.04⅞
70-72 octane (regular)	.05	.05¼
60-62 400	.04	.04¼
64-66 375	.04½	.04⅝

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)

U. S. Motor grades:		
62 octane and below	.04½	.04⅝
63-66 octane	.04⅝	.04⅞
67-69 octane	.05	.05¼
70-72 octane (regular)	.05½	.05⅝

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:		
62 octane and below	.04⅜	.04⅝
67-69 octane	.05	.05¼
70-72 octane (regular)	.05½	.05¾

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.04	.04¼
63-66 octane	.04⅜	.04⅝
67-69 octane	.04⅝	.05
70-72 octane (regular)	.05	.05¼
60-62 400 grades:		
62 octane and below	.04	.04¼
63-66 octane	.04⅜	.04⅝
67-69 octane	.04⅝	.04⅞
70-72 octane (regular)	.05	.05¼
64-66 375	.04¾	.05
68-70 360	.05	.05¼

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.04⅝	.04¾
60-64.9 octane	.06⅜	.06⅝
65-70 octane	.06⅝	.06⅞
64-66 390	.05½	.05¾
68-70 350	.05¾	.06

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.07½	.08½
58-60 400, 65 oct. and higher	.08¼	.09¼

EAST COAST (Domestic)—

U. S. Motor, 60-64.9 octane:		
New York (Bayonne)	.07	.07¼
Philadelphia	.07	.07¼
Boston	.07½	.07¾
Baltimore	.07	.07¼
Charleston, S. C.	.07	.07¼
U. S. Motor, 65 and above:		
*New York (Bayonne)	.07⅛	.07⅜
Philadelphia	.07⅛	.07⅜
Boston	.07¼	.07⅝
Baltimore	.07⅛	.07½
Charleston, S. C.	.07¾	.08

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane	.05¼	.05½
60-64.9	.05⅜	.05½
65 octane and higher	.05½	.05⅝

Naphtha

PENNSYLVANIA (inland refineries)—

50-52 450 (blending)	.04⅝	.04¾
52-54 450 (blending)	.04⅝	.04¾
54-56 450 (blending)	.04⅝	.04¾

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.03
Grade 18-55	.03½	.03⅝

NORTH TEXAS—

Grade 26-70		.03
Grade 18-55	.03½	.03⅝

CALIFORNIA—

75-85 375-390	.06½	.07½

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70		.03⅜

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110 flash, 540-550 e.p.	.04¼	.04⅜
41-43 gr., 300-350 i.b.p., 110-125 flash, 500-520 e.p.	.04¼	.04½
46-48 gr., 210-230 i.b.p., 480 max. e.p.	.04¾	.04⅞

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.04¼	.04⅜
42-44	.04⅜	.04½

NORTH TEXAS—

41-43	.04¼	.04⅜

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43	.04½	.04⅝

ARKANSAS (Ark., N. La., Miss. del.)—

41-43		.04⅝

PENNSYLVANIA (inland refineries)—

45	.05½	.05⅝
46	.05⅝	.05¾
47	.05¾	.05⅞

CHICAGO (Based on Group 3)—

41-43	.04⅛	.04⅜
42-44	.04⅜	.04⅝

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.06	.06¾

NEW YORK (Bayonne, N. J.)—

41-43		.06

***GULF COAST (domestic)—**

41-43	.05	.05⅛

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

No. 1 prime white, 38-42	.04⅛	.04¼
No. 1 straw, 38-40	.04	.04⅛
No. 2 straw, 32-36	.03⅞	.04
No. 2 dark, 32-36	.03¾	.03⅞
No. 3 zero to 15, 28-32	.03½	.03⅝
No. 3, 15 and above, 28-32	.03	.03⅛

NORTH TEXAS—

No. 1 prime white, 38-42	.04⅛	.04¼
No. 1 straw, 38-40	.04	.04⅛

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03⅝	.03¾

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36	.03⅞	.04

CHICAGO (Based on Group 3)—

No. 1 prime white, 38-40	.04⅛	.04¼
No. 1 straw, 38-40	.04	.04⅛
No. 2 straw, 32-36	.03⅞	.04
No. 2 dark, 32-36	.03⅝	.03⅞
No. 3, zero to 15, 28-32	.03½	.03⅝
No. 3, 15 and above, 28-32	.03	.03⅛

NEW YORK (Bayonne, N. J.)—

*No. 1		.06
*No. 2		.05¼
*No. 4		.05

*Barge deliveries one-eighth to one-fourth cent under above tankcar price.

Gas Oil and Fuel Oil

(Gas oil per gal.; fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.02⅞	.03
No. 4, low cold test, 24-28	1.10	1.15
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.82½	.87½
Below 18 fuel oil, industrial	.70	.75

NORTH TEXAS—

U.G.I. gas oil	.02⅞	.03
No. 4, low cold test, 24-28	1.10	1.15
No. 5, low cold test, 18-22	.82½	.87½
Below 18 fuel oil, industrial	.70	.75

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.10	1.15
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.82½	.90
No. 5, 15 and above (18-22)	.80	.85
No. 6, low cold test, 10-16	.75	.82½

PENNSYLVANIA (inland refineries)—

36-40	.04⅞	.05⅛

CALIFORNIA

Los Angeles:		
30-34 gas oil, per bbl.	1.55	1.70
24 plus diesel, per bbl.	1.50	1.70
24 plus diesel (bunkers)	1.60	1.70
12-16 (bunkers at tidewater)	.90	1.00
10-16 (cargo lots)	.88	.95
12-17 (tankcars)	.85	.95
10-17 (high sulfur)	.65	.95
San Joaquin Valley:		
10-18 (tankcars)	.60	.85
24 plus diesel, per bbl.	1.50	1.65
San Francisco:		
24 plus diesel, per bbl.	1.55	1.70
24 plus diesel (bunkers)	1.60	1.70
10-16 (bunkers)	1.00	1.05

GULF COAST—

28-30 gas oil	.04½	.04⅝
28-30 diesel (bunkers)		1.90
Bunkers (bulk cargoes)		.85
Bunker C (bunkers)		1.05

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.05
28-30 diesel (lighterage 6¼c per bbl.)		2.10
28-30 diesel (tankcars)		.05
Bunker C (to ocean-going ships in N. Y. harbor)		1.25
Industrial fuel (tankcars)	.04½	.04¾

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

Bright Stocks:		
190-200 D, 15-25		.19
150-160 D, 0-10		.16
150-160 D, 15-25		.15
150-160 E, 15-25		.14½
100-110 D, 0-10		.14½
Steam refined:		
631 green (treated)		.13½
600 dark green (untreated)		.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):

10 pour test	.18	.19
15 pour test	.17	.18
20 pour test	.16	.17
25 pour test	.15	.16
Steam refined:		
600	.07	.08
650	.10½	.11½
600 Pennsylvania flash	.11	.12
630 flash	.14	.15
600 Warren E filtered	.13	.14

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:		
150-3		.09
180-3		.10
180-4		.09½
200-3		.10½
200-4		.10
250-3		.11½
250-4		.11
280-3		.12½
280-4		.12
300-3½		.13
400-3½		.14
100-2½ paraffin oil		.06
15-20 Cold Test:		
200-3		.10
200-4		.09½
250-3		.11
250-4		.10½
280-3		.12
280-4		.11½

GULF COAST—

Pale Oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08¼	.08¾
750-3½	.08⅝	.09¼
1,200-3½	.09½	.09¾
1,500-4	.09¾	.10
Red Oils:		
200-5-6	.07¼	.07½
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08¾	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)—

Pale Oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red Oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11½

PENNSYLVANIA—

150 vis. at 70° F. color, 400-405 flash:		
Zero pour test	.18	.18½
10 pour test	.16½	.17
15 pour test	.16	.16½
25 pour test	.15	.15½
180 vis. at 70° F., 3 color:		
25 pour test	.16	.16½
200 vis. at 70° F., 3 color:		
Zero pour test	.20½	.21
10 pour test	.19½	.20
15 pour test	.19	.19½
25 pour test	.17	.17½

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale	.02¾	.02⅞

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0270	.0275
124-126 (a.m.p.) w.c. scale	.0270	.0275

NEW YORK—

Wax in bags fully refined:		
122-125 (a.m.p.) wax		.0445
125-127 (a.m.p.) wax		.0455
128-130 (a.m.p.) wax		.0480
130-132 (a.m.p.) wax		.0505
133-135 (a.m.p.) wax		.0535
135-137 (a.m.p.) wax		.0560
124-126 (a.m.p.) w.s.	.0295	.0300
124-126 (a.m.p.) y.s.	.0265	.0280
Petrolatum in barrels, carload lots:		
Dark green		.01⅞
Amber	.02⅞	.03
Extra amber	.03	.03⅛
Lily white	.06⅝	.06¾
Snow white	.07¾	.07⅞
Cream	.05⅝	.05¾

Export Prices

GASOLINE

GULF COAST—

U. S. Motor	.05⅜	.05½
60-62 400	.05⅝	.05½
61-63 390		.05⅝
64-66 375		.05¾

LOS ANGELES—

U. S. Motor grades:		
55-65 octane	.05¾	.06
65-69 octane		.06¼
Above 69 octane		.06½

KEROSENE

GULF COAST—

41-43 prime white		.05⅛
41-43 water white		.05¼
44 water white		.05⅜

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbls.)—

Cylinder Stocks:		
600 Warren E	.21½	.22
600 S.R. unfiltered	.16½	.17
630 S.R. unfiltered	.21	.21½
600 flash, S.R.	.21½	.22
630 flash, S.R.	.25½	.26
Bright Stocks:		
8 color	.23½	.24
6½ plus color in dilution	.23	.23½

NEUTRAL OIL

200-3 color	.30	.30½
150-3 color	.25½	.26

PARAFFIN WAX

NEW YORK (prices per pound)—

123-126 a.m.p.		.04125
125-127 a.m.p.		.0425
128-130 a.m.p.		.0450
133-135 a.m.p.		.0525
135-137 a.m.p.		.0550
Crude Scale:		
124-126 w.s.	.0295	.0300
124-126 y.s.	.0265	.0280

CRUDE OIL PRICES

Oklahoma, Kansas, North Central and East Central Texas

(January 28, 1937)

East Texas (May 22, 1937)*	$1.35
Van, Tex.†	1.10
Camp Hill, Tex.	1.27
Cass County, Tex.‡	1.25
Talco	.73
Altus and Tipton, Okla.§	1.20
Other fields (see gravity table).	

*All companies. †Humble Oil & Refining Co.; Pure Oil Co. ‡Texas Co. §Gulf Oil Co. Talco by Humble Oil & Refining Co.

West Texas

See gravity table.

Pecos County*	.91
Pecos shallow†	.81

*Shell Petroleum Corp., Gulf Pipe Line Co., and Humble Oil & Refining Co. †Shell Petroleum Corp.

Rocky Mountain States

(Effective January 28, 1937)

Iles, Colo., light*	$1.18
Iles, Colo., heavy*	1.12
Greybull, Wyo.*	1.30
Torchlight, Wyo.*	1.30
Grass Creek, Wyo., light*†	1.30
Grass Creek, Wyo., heavy (Nov. 4, 1936)*†	.62
Hamilton Dome, Wyo. (Jan. 1, 1937)*	.67
Elk Basin, Wyo., light*†	1.30
Frannie, Wyo., heavy*	.62
Frannie, Wyo., light	.70
Hogback, New Mex. (Jan. 1, 1937)*	1.21
Pondera, Mont. (Jan. 26, 1936)*	1.05
Salt Creek Dutton Creek and Midway, Wyo., take Stanolind's Oklahoma prices on a gravity basis.	
Big Muddy, Wyo.†‡	1.18
Rock Creek, Wyo.†	1.20½
Lea County, N. M. (see West Texas gravity table)	
Artesia, N. Mex. (Jan. 28, 1937)‡	.90
Maljamar, N. Mex. (Jan. 28, 1937)†	.90
Canon City and Florence, Colo.	1.10
Lance Creek, Wyo.	.97
Sunburst, Mont. (Nov. 16, 1937)†	.90
Cat Creek, Mont. (Jan. 1, 1938)‡	$1.30
Cut Bank, Mont. (Oct. 25, 1937), (posted by Northwest Refining Co.)	1.10
Garland, Wyo. (Jan. 1, 1937)†	.50

*Stanolind Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co. Cut Bank by Toronto Pipe Line Co.

Southwest Texas

(January 28, 1937)

Pettus	1.37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09
Luling	1.00
Lytton Springs	1.12

Saxet and Taft take same gravity table as Gulf Coast.

North Louisiana and Arkansas

Smackover, all grades	$.90
Tullos and Urania	1.02
El Dorado East field	.90
Union County, Ark.	.90
Ouachita County, Ark.	.90
Lisbon, La. (Dec. 13, 1937)*	.98

*Caddo Crude Oil Purchasing Co.

Gulf Coast

(January 28, 1937)

Choctaw and Darrow, La. See note below	
Clay Creek, Tex.	$1.00
Garden Island, La.	1.37
Cleveland, Tex.	1.27
Hardin, Tex.	1.15
Lafitte, La.	1.24
Livingston, Tex.	1.27
Welsh, La	.98
Tepetate (La.) (Jan. 28, 1937)	1.24

Duval, Jim Hogg, Webb and Zapata counties, Texas, and Heyser and Placedo fields take Mirando gravity prices. Jennings, La., 5 cents lower than Gulf Coast prices on each degree. Segno, Texas, takes Gulf Refining Co.'s Gulf Coast prices. Choctaw and Darrow, Louisiana, posted for first time by Standard Oil Co. of Louisiana, start below 21 degrees at 90 cents, with 3-cent differential up to 35 gravity, then 2-cent differential up to 40 and above, $1.36. Effective October 1, 1937, Stanolind Oil & Gas Co. in Evangeline, La., pays 92 cents for below 20 gravity, adding 2 cents for each degree upward to 40 and over, at $1.34.

Middle Western States

OHIO OIL CO.
(Effective January 28, 1937)

Lima	$1.25
Illinois	1.35
Princeton, Ind.	1.35
Midland, Mich. (Jan. 5, 1938)*	1.12
West Branch, Mich (Dec. 29, 1937)†	.80
Buckeye (Jan. 8, 1938)	1.09½
Arenac, Mich (Dec. 29, 1937)†	.80
Muskegon, Mich.	1.00
Eastern Kentucky:	
Big Sandy River	1.42
Kentucky River	1.50
Western Kentucky	1.40

*Posted by Pure Oil Co.
†McClanahan P. L. & Simrall

Midland, Mich., price posted by Simrall Corp. and Pure Oil Co. includes Greendale, Porter, Beaverton, Crystal and equal grades. West Branch and Arenac by Simrall Corp. Eastern Kentucky crude purchased by Ashland Refining Co., Ashland, Ky. Buckeye posted by Simrall Corp. and Pure Oil Co.

Eastern States

TIDE WATER ASSOCIATED OIL CO.
(Effective December 1, 1937)

Bradford, Pa.	$2.20
Allegany, N. Y.	2.20

SOUTH PENN OIL CO.
(Effective December 1, 1937)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	2.20
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	1.88
Pennsylvania Grade Oil in Eureka Pipe Line lines	1.82
Pennsylvania Grade Oil in Buckeye Pipe Line lines	1.70
Corning Grade Oil in Buckeye Pipe Line Co.'s lines	1.27

PENNZOIL CO.
(Effective December 1, 1937)

Pennsylvania Grade Oil in National Transit Lines:	
Group A	2.15
Includes Cochran, Franklin, Hamilton and Doolittle districts.	
Group B	2.14
Includes Tidioute district.	
Group C	2.13
Includes Turkey and Tidioute districts.	
Group D	2.12
Includes Bear Creek and Porkey districts.	
Group E	2.10
Includes Eldeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts.	

PURE OIL CO.
(Effective December 1, 1937)

Cabin Creek, W. Va.	1.82
Bradford Hollow, W. Va.	1.82
Kelly Creek, W. Va.	1.82

Canada

Ontario (Sept. 9, 1933)*

Petrolia	$2.10
Oil Springs	2

TURNER VALLEY NAPHTHAS AND CRUDE OIL
(January 5, 1938, by Imperial Oil, Ltd.)

Clear naphtha and discolored naphtha, 65 gravity and higher	$2.14
Discolored naphtha and crude oil 40-40.9 gravity	1.14
Increasing 2 cents for each degree gravity with top price for 64-64.9 gravity	1.62

These prices f.o.b. producers field tankage.

*Imperial Oil, Ltd.

Mexico

Heavy Mexican crude	$.90

*In U. S. currency, f.o.b. ship, based on November spot market transactions.

Crude Prices by Gravities

	Oklahoma-Kansas	Oklahoma-Texas	North and Central Texas	East Central Texas (Mexia district)	North Louisiana-Arkansas	Gray County, Texas	Hutchinson-Carson counties, Texas	Rodessa, Louisiana-Texas and Panola County, Texas	Conroe, Tomball, Raccoon Bend, (Deep) Setauna	Gulf Coast	Gulf Coast	Lea County, N. Mex. West Texas except Pecos County	Mirando district, Texas	Marion County, Texas	Refugio, Greta, Saxet, Taft, Texas	Anahuac, Flour Bluff, Dickson, Turtle Bay	White Castle, Louisiana	Iowa, Louisiana	Cayuga, Texas
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Bel. 18	....	....	....	....	....	....	....	....	....	$.90	....	....	....	....	....	....	....	$.90	....
18-18.9	....	....	....	....	....	....	....	....	....	.92	....	....	....	....	....	....	....	.92	....
19-19.9	....	....	....	....	....	....	....	....	....	.94	....	....	....	....	....	....	$ .94	.94	....
20-20.9	....	....	....	....	....	....	....	....	....	.96	$.95	....	$.96	....	$1.01	....	.96	.96	....
21-21.9	....	....	....	....	....	....	....	....	....	.98	.98	....	.98	....	1.03	....	.98	.98	....
22-22.9	....	....	....	....	....	....	....	....	....	1.01	1.01	....	1.00	....	1.05	....	1.01	1.01	....
23-23.9	....	....	....	....	....	....	....	....	....	1.04	1.04	....	1.02	....	1.07	....	1.04	1.04	....
24-24.9	....	....	....	....	....	....	....	....	....	1.07	1.07	....	1.04	....	1.09	....	1.07	1.07	....
Bel. 25	....	$ .98	....	....	$ .90	....	....	$.93	....	....	....	....	....	$.90	....	....	....	....	$ .88
25-25.9	....	1.00	....	....	.92	....	....	.95	....	1.10	1.10	$.78	1.06	.92	1.11	....	1.10	1.10	.90
26-26.9	....	1.02	....	....	.94	....	....	.97	....	1.13	1.13	.80	1.08	.94	1.13	....	1.13	1.13	.92
27-27.9	....	1.04	....	....	.96	....	....	.99	....	1.15	1.15	.82	1.10	.96	1.15	....	1.15	1.15	.94
28-28.9	....	1.06	....	....	.98	....	....	1.01	....	1.17	1.17	.84	1.12	.98	1.17	....	1.17	1.17	.96
Bel. 29	$1.00	....	$.96	$1.03	....	....	....	....	$1.20	....	....	....	....	....	....	....	....	....	....
29-29.9	1.08	1.08	.98	1.05	1.00	....	....	1.03	1.22	1.19	1.19	.86	1.14	1.00	1.19	....	1.19	1.19	.98
30-30.9	1.10	1.10	1.00	1.07	1.02	....	....	1.05	1.24	1.21	1.21	.88	1.16	1.02	1.21	$1.16	1.21	1.21	1.00
31-31.9	1.12	1.12	1.02	1.09	1.04	....	....	1.07	1.26	1.23	1.23	.90	1.18	1.04	1.23	1.18	1.23	1.23	1.02
32-32.9	1.14	1.14	1.04	1.11	1.06	....	....	1.09	1.28	1.25	1.25	.92	1.20	1.06	1.25	1.20	1.25	1.25	1.04
33-33.9	1.16	1.16	1.06	1.13	1.08	....	....	1.11	1.30	1.27	1.27	.94	1.22	1.08	1.27	1.22	1.27	1.27	1.06
34-34.9	1.18	1.18	1.08	1.15	1.10	....	....	1.13	1.32	1.29	1.29	.96	1.24	1.10	1.29	1.24	1.29	1.29	1.08
Bel. 35	....	....	....	....	....	$.96	$.91	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1.20	1.20	1.10	1.17	1.12	.98	.93	1.15	1.34	....	1.31	.98	1.26	1.12	1.31	1.26	1.29	1.29	....
36-36.9	1.22	1.22	1.12	1.19	1.14	1.00	.95	1.17	1.36	....	1.33	1.00	1.28	1.14	1.33	1.28	1.29	1.29	....
37-37.9	1.24	1.24	1.14	1.21	1.16	1.02	.97	1.19	1.38	....	1.35	1.02	1.30	1.16	1.35	1.30	1.29	1.29	....
38-38.9	1.26	1.26	1.16	1.23	1.18	1.04	.99	1.21	1.40	....	1.37	1.04	1.32	1.18	1.37	1.32	1.29	1.29	....
39-39.9	1.28	1.28	1.18	1.25	1.20	1.06	1.01	1.23	1.42	....	1.39	1.06	1.34	1.20	1.39	1.34	1.29	1.29	....
40.over	1.30	1.30	1.20	1.27	1.22	1.08	1.03	1.25	1.44	....	1.41	1.08	1.36	1.22	1.41	1.36	1.29	1.29	....

Column 1—Companies posting are Barnsdall, Bell, Champlin, Continental, Cushing, Derby, Bay, Eason, El Dorado, Cities Service, Falcon, Globe, Gulf, Johnson, Kanotex, National, Phillips, White Eagle, Stanolind, Sunray, Texas, Sun Vickers and Wilcox.
Column 2—Anderson & Prichard, Carter, Cosco, Deep Rock, Magnolia, Mid-Continent, Pure, Rock Island, Shell, Sinclair, Skelly and Tide Water.
Column 3—All purchasers.
Column 4—Humble Oil & Refining Co. and Sinclair Oil Purchasing Co.
Columns 5, 6, 7 and 8—All purchasers.
Column 9—Humble Oil & Refining Co. and Sun Oil Co. Tidewater Oil Co.'s schedule starts at 35 degrees, $1.34 with 2-cent spread up to 40 and over at $1.44. (Raccoon Bend prices are for deep sand oil.)
Column 10—The Texas Co. (Gulf Refining Co. pays same prices up to and including 34 gravity, but continues its 2-cent spread up to 40 and over at $1.41.)
Column 11—Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Sun Oil Co.
Column 12—All purchasers.
Column 13—All purchasers (effective July 6, 1937).
Column 14—Magnolia Petroleum Co.
Column 15—Humble Oil & Refining Co. (effective July 6, 1937).
Column 16—Humble Oil & Refining Co.
Columns 17 and 18—Shell Petroleum Corp.
Column 19—Tide Water Oil Co.

Rocky Mountain Runs

Production estimates for week ended January 8, 1938:

WYOMING

	Bbls.
Salt Creek	16,100
Big Muddy	1,310
Byron	1,040
Dallas Derby	570
Frannie	790
Garland	2,470
LaBarge	980
Lance Creek	12,250
Lost Soldier	1,480
Medicine Bow	4,370
Oregon Basin	2,170
Osage	800
Quealy dome	870
Rock River	2,970
South Casper	500
Miscellaneous	2,210
Total Wyoming	50,880

MONTANA

Border	20
Cat Creek	620
Cut Bank	7,770
Dry Creek	400
Kevin-Sunburst	3,830
Pondera	1,130
Total Montana	13,770

COLORADO

Florence	170
Fort Collins and Wellington	250
Iles dome	2,710
Moffat	370
Orchard	30
Rangely	90
Tow Creek	150
Price	660
Total Colorado	4,430

NEW MEXICO

Cooper	5,230
Eaves	1,020
Eunice	27,640
Hardy	1,650
Hobbs	15,970
Jal	1,290
Langlie	3,130
Lynch	660
Lynn	520
Mattix	2,640
Monument	29,480
North Lynch	60
Penrose	4,610
Rhoades	140
Skelly	1,790
South Eunice	2,550
Vacuum	330
Artesia-Maljamar	7,170
Getty	200
Hogback	200
Rattlesnake	750
Table Mesa	100
Total New Mexico	107,130
Total Rocky Mountain region	176,210

Crude Oil Price Changes

Pure Oil Co. effective January 5, followed by other buyers cut the price of Midland, Michigan, crude 15 cents per barrel bringing the price to $1.12 per barrel in Porter, Greendale, Sherman, Chippewa, Beaverton, Allegan, and on equal grades in other pools. Simrall Corp. cut Buckeye crude on January 8 to $1.09½ per barrel, a 15-cent reduction.

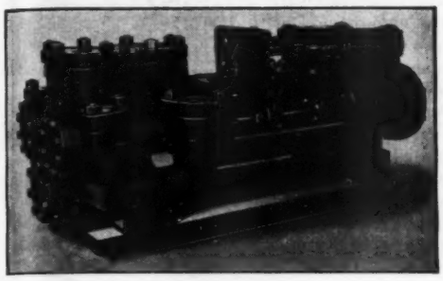
Effective January 5, Imperial Oil, Ltd. reduced prices on naphthas and crude oil in the Turner Valley, Alberta, field 22 cents per barrel.

Effective January 1, Continental Oil Co. reduced the price of Cat Creek, Montana, crude 10 cents per barrel.

NEW OR IMPROVED EQUIPMENT

Large Volumes Moved at High Pressures by New F-M Pump

A new duplex steam pump with eight-cover side-pot type fluid end and improved piston-valve steam



end has been announced by Fairbanks, Morse & Co., 900 South Wabash Avenue, Chicago. This Fig. 6285 steam pump offers an economical means of handling oil, water or other free-flowing liquids at high pressures and in large quantities. It was developed for oil-field boiler-feed service, but is suited to general industrial applications. Sizes are available for capacities up to 148 g.p.m. and fluid-end pressures up to 1,000 pounds per square inch.

The balanced, piston-type steam valves assure efficient operation even with high steam pressures and with superheated steam. Valve openings close completely, without loss of pressure, under all conditions of temperature and pressure.

The eight-cover side-pot fluid end permits easier servicing. Each suction- and discharge-valve is located in its own valve-pot and is easily accessible through the removal of a single valve-pot cover. Large and direct fluid-end passageways offer low resistance to flow and contribute to operating economy.

The steam and fluid ends are each effectively sealed by an ample supply of packing in an extra-deep stuffing-box. The cradle between the steam and fluid ends is long enough to permit access to both stuffing-boxes. This same type of fluid end is available also in the F-M Fig. 6185 duplex power pumps for motor, belt or engine drive. These have enclosed self-oiling power ends with herringbone gears and large roller bearings.

Bulletins, Booklets and Other Literature for the Trade

A bulletin on R & I combination blankets and one-coat finish Stic-tite for boiler side walls, fractionating equipment, bubble-towers, heat-exchangers, hot tanks, stills, etc., is offered by the Refractory & Insulation Corp., 381 Fourth Avenue, New York.

A loose-leaf catalog of unusual attractiveness may be obtained from the Pyle-National Co., 1334 North Kostner Avenue, Chicago. It covers the entire range of floodlights manufactured by this company.

The Bijur meter unit, which automatically keeps the correct oil film in each bearing, is the subject of a bulletin mailed on application by the Bijur Lubricating Corp., Long Island City, N. Y.

The Bucyrus-Erie Co., South Milwaukee, Wis., has released a bulletin, No. 21-W-2, illustrating and describing the Bucyrus-Armstrong 21-W water-well drill. Field action photographs as well as pictures showing the machinery, derrick, controls and other important parts are displayed.

Two bulletins have been prepared for distribution by the Chicago Metal Hose Corp., Maywood, Ill., one on Rex-tube and Rex-weld insulated steam hose and one on metal oil hose.

A 24-page booklet on Haysdraft gauges and a 16-page booklet on Hays combustion meters are mailed on request by the Hays Corp., Michigan City, Ind. Both are in colors and illustrated.

The latest issue of the Wheatley Pumper, published by Wheatley Brothers, Pump and Valve Manufacturers, Tulsa, prints the statement prepared by the committee on percentage depletion of the Mid-Continent Oil and Gas Association.

Reduction of gas-oil ratios is discussed in the current number of Hot Shots, published by Lane-Wells Co., Los Angeles, Calif.

Thermit Announces Addition to Murex Line of Electrodes

Two new electrodes for manual arc welding have been announced by Metal & Thermit Corp., 120 Broadway, New York, exclusive sales agent for American Murex Corp. The Murex Vertex electrode is a reverse-polarity rod designed for welding mild steel in flat, vertical and over-head positions, and is used for general shop work where positioning of parts during welding is not practical. It is employed also in structural welding. The Murex Genex may be used in all positions and it readily bridges gaps between plates where assembly fit-up is poor. It is a straight-polarity electrode.

These electrodes serve to round out the Murex line which includes some 20 different types of welding-rods for mild-steel fabrication, the repair of manganese steel parts, the building up of wearing surfaces, and for welding a number of the new high-strength, low-alloy steels. The entire line is described in a pocket-size pamphlet which may be obtained by writing to the company.

Truck-Tank Problem Involving Weight and Capacity Solved

The problem of designing and building a tank for a gasoline truck with a capacity of 2,800 gallons and a total weight of tank and equipment

not to exceed 7 tons was solved by Gar Wood Industries, Inc., in the construction of four refuelers for the Texas Corp. The new refuelers, examples of modern cab-over-engine design, can deliver 150 gallons of impurity-free gasoline per minute from each of two metered systems. The trucks, 31 feet long overall, are equipped with all electric explosion-proof fittings.

The design which made it possible to reduce the dead weight of the tank enough to carry 200 additional gallons of gasoline was accomplished by the use of Yoloy, a nickel-copper high-tensile steel produced by the Youngstown Sheet & Tube Co. This special steel gives the tank longer life because it is corrosion-resistant. Indicators show the level of the liquid in all compartments at all times, and an oil-chamber with thermostatically controlled electric heaters provides motor oil at required temperature.

Osage Issues Spanish Catalog

The Osage Metal Co., Inc., 1900 North Eastern Avenue, Oklahoma City, Okla., has issued a Spanish edition of its catalog for distribution in South American and other Spanish-speaking regions. Osage metal is described by the company as a "super diamond substitute," for use in hard-facing drilling-bits. The company's complete line of hard-metal inserts and rods is described and illustrated. Instructions for using the products are included.

MASTER CHAIN MARKS ADVANCE IN ROTARY DRILLING

The Master rotary chain, put on the market by Baldwin-Duckworth Chain Corp., Springfield, Mass., is said by the manufacturers to mark an important advance in the production of efficient

equipment for deep drilling. The chain has a minimum ultimate strength of 185,000 pounds. Patented steel cotters permit easy assembly in the field without special tools.

Solid rollers, internally ground, are made from solid bar. Internally and externally ground seamless bushings are keyed to side plates. The chain is built in staggered assembly to assure perfect balance under high-speed, heavy-load operation, adding materially to chain strength as well.

The Baldwin patent pin lock, a feature of the Master chain, has been fully tested on the Baldwin series of oil-well chains. This pin lock supplies the rigidity of a riveted-type chain and the assembly and disassembly advantages of a detachable-type chain. Ample facilities are provided for the penetration of oil to the chain joints.

This carefully finished, well-lubricated chain bearing is said to offer long life under severe drilling conditions. The side bars are of forged steel. Forged pins with an upset head are practically integral with the side links after assembly.

Elbow-Propeller Type Pump Is Developed by Worthington

A new line of elbow-propeller type circulating pumps to handle, not only water, but semiviscous liquids, is offered by the Worthington Pump & Machinery Corp., Harrison, N. J. These pumps, compact and sturdy in design, may be installed in pipe lines for booster or circulating service, the small number of vanes and large openings providing a large streamline flow channel. Internal bearings and ball-type thrust bearings are provided, and the units are suitable for any type of drive. The pumps range in capacity from 1,000 to 2,000 g.p.m., at heads up to 20 feet.

Heads Petroleum Sales Division

William Sewall, assistant manager of the B. F. Goodrich Co. petroleum sales department since 1933, has been named department manager, succeeding J. P. Woodlock, who resigned to take an executive position with a steel company. Mr. Sewall joined Goodrich in 1929, when the Hood Rubber Co. was purchased by Goodrich, and he became advertising manager of the Hood and Miller tire division. He had been assistant to the tire sales manager and tire advertising manager for Hood in Watertown, Conn. Four years later he was made assistant manager of the Goodrich petroleum sales department with headquarters in New York. He graduated from Dartmouth College in 1917 and served overseas as an officer in the First Division of the U. S. Army, entered the rubber business with the Converse Rubber Shoe Co., Malden, Mass., shortly after the armistice and joined Hood in February, 1926. His headquarters will be at the principal offices of Goodrich in Akron, Ohio.

Here and There With Men Who Manufacture Equipment

Joshua L. Miner, technical director of the Atlas Lumnite Cement Co., New York, has been elected director and vice president, succeeding the late Maj. C. R. Hulsart.

J. E. MacMahon, formerly assistant sales manager, has been appointed general sales manager of Graton & Knight, Worcester, Mass., to succeed C. O. Drayton, who resigned.

Stanley M. Hunter has been appointed manager of sales for the American Hoist & Derrick Co., St. Paul, Minn. Mr. Hunter has been associated with the company two years.

The Kibele Manufacturing Co., Dallas, Tex., has placed distribution of its products on the Pacific Coast in the hands of the Howard Supply Co., 5125 Santa Fe Avenue, Los Angeles. The line includes tubing-catchers, swabs, boiler-feed pump-pistons and packers.

Nathan R. Birge, assistant to the president of General Electric Co. since 1927, has been elected a vice president.

A. P. McCarnes has been appointed to take charge of oil-country sales in Texas for the Union Wire Rope Corp. Mr. McCarnes has represented the company in West Texas, with headquarters in Pampa. As division sales manager, his headquarters will be in Dallas.

The Murphy Diesel Co., Ltd., Milwaukee, Wis., has appointed George P. Hough sales manager.

At a special meeting of the directors of the Axelson Manufacturing Co. the regular quarterly dividend of 15 cents per share and an extra dividend of 25 cents per share were declared.

The Kropp Forge Co., Chicago, maker of drop and hammer forgings and forged steel flanges, recently celebrated its one hundredth anniversary by dedicating a new machine shop at a party attended by the heads of some 500 industrial and equipment manufacturers from the Chicago area.

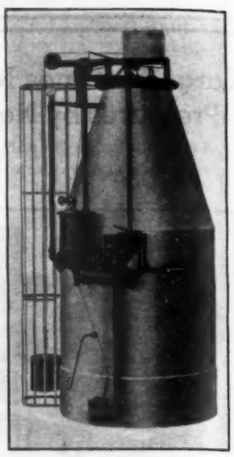
The L. H. Gilmer Co. has appointed D. A. Cant district manager in Oklahoma for the sale of the company's V-belts, Kable Kord flat belting and other products. His headquarters are in Tulsa.

McGregor & Thilenius, Tulsa, have been appointed representatives in Oklahoma and Kansas for the Atlantic Metal Hose Co., New York. The line includes all types of flexible metal hose in steel and copper and also seamless steel hose for use on diesel engine exhaust lines in place of expansion joints.

J. M. McNeal, European sales manager of the Landis Machine Co., Waynesboro, Pa., has returned to the home office for a visit. Mr. McNeal's headquarters are in Birmingham, England, but he also looks after the interests of his company on the Continent.

Two Double-Rated Generators Are Added to Airco's Line

Air Reduction Sales Co., 60 East Forty-second Street, New York, has added two double-rated stationary acetylene generators to its line of oxy-acetylene equipment. The new generators are available in both 300- and 500-pound carbide capacities and have rated delivery capacities of 600 and 1,000 cubic feet of acetylene per hour, respectively. By employing double-rated generators, plants requiring a large quantity of gas for steady production are enabled to meet the demand with a minimum number of units and space, although single-rated generators which employ a larger size carbide are more suitable for plants in which the acetylene requirements are very intermittent. Automobile assembly plants, steel mills, shipyards and other plants using large quantities of acetylene, have adopted these generators as standard. Both generators are listed by the Underwriters' Laboratories.



The new products are based on the design of the Airco-DB single-rated generators. They lend themselves to multiple use owing to the small floor space required. The 300-pound generator shell is 42¾ inches in diameter and 105 inches high. The 500-pound shell is 54¾ inches in diameter and 115 inches high. The shells of both generators are of heavy-gauge sheet steel hot-galvanized inside and out to give maximum protection against corrosion.

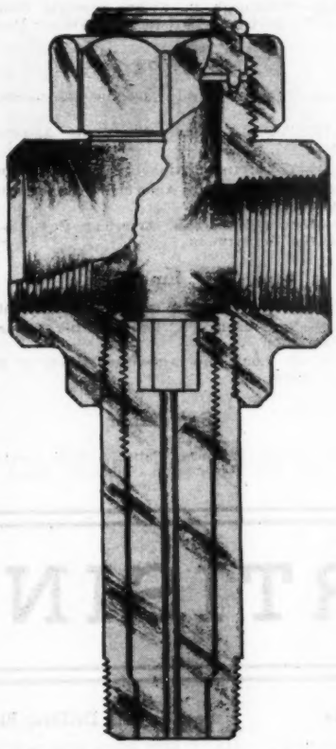
The design makes the best use of the space available and results in a unit which is dependable, safe, and has the advantage of having all its parts accessible for inspection or cleaning.

PITTSBURGH EQUITABLE SALESMEN HOLD MEETING

The annual sales meeting of the Pittsburgh Equitable Meter Co. and its subsidiary, the Merco Nordstrom Valve Co., was held in Tulsa December 27, 28 and 29, 1937. Back row: L. R. VanArsdale, Tulsa; O. W. Barnett, Shreveport, La.; R. R. Bush, Tulsa; C. R. Parker, Fort Worth, Tex.; C. K. Madison, Houston, Tex.; F. N. Dillman, Tulsa; J. L. Cottrell, Tulsa; E. P. Martin, Corpus Christi, Tex. Front row: W. J. McArt, Oklahoma City; F. A. Arnesen, Dallas, Tex.; W. R. McLaughlin, Dallas; A. J. Kerr, district manager, Tulsa; James H. Baker, Tulsa; M. D. Gilbert, Houston; D. D. Collins, Tyler, Tex.

Galling of Threads Is Obviated by Flow Fitting of New Type

A new O-C-T flow fitting, introduced by the Oil Center Tool Co., Houston, Tex., and available



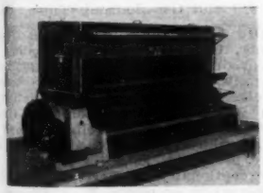
in either cross or tee type, is designed for use with any standard type choke that permits replacement of the bean through the flow fitting.

A special cap with swivel nut replaces the conventional bullplug. A coarse, straight thread connection between the fitting and the swivel nut prevents galling of the threads, which always is likely where the bean is changed frequently and a bullplug is used.

A ring, machined integrally with the cap-nut, effects a seal in a groove provided on the flow fitting as shown in the illustration.

New Ozalid Machine Produces True-to-Scale White Prints

The Ozalid Corp., 354 Fourth Avenue, New York, has announced the Ozalid type 1000 developing machine, which not only can be used with existing blueprint equipment to produce positive true-to-scale prints, but can be combined with a popular printer to provide a complete printing and developing unit having a capacity of 32 linear inches per minute.



The manufacturer states that this new machine enhances every advantage of the Ozalid positive-printing, dry-developing process and quotes from service records to show shortcuts in drafting time can be effective in the petroleum industry. One company, for example, did not prepare new right-of-way drawings when relaying a line, but through the use of Ozalid transparent duplicates prepared new tracings without defacing the old original tracings, redrawing surrounding details, or resorting to time-consuming and costly reproduction methods.

Other savings include those of time in the print-room and space. There are two simple steps, exposure and dry-development, and the complete unit is said to be so clean and compact that it can be operated from the top of a table in a drafting-room, an engineering or land office, or a construction shack.

International Harvester Addition

Plans for a large addition to the International Harvester Co.'s tractor works at 2600 West Thirty-first Boulevard, Chicago, have been announced. The addition, with buildings and equipment, will cost in excess of $1,000,000. It will be devoted entirely to the production of International's line of crawler-type tractors as distinguished from wheel-type. The diesel engines will continue to be made in the company's works in Milwaukee. A one-story building of saw-tooth design, with brick and steel walls and gypsum roof, the new structure will add 240,000 square feet (six and one-half acres) of floor space, bringing the total floor space of the plant to approximately 1,400,000 square feet. TracTrac-Tor machining and assembling operations will be conducted in the new space, with the assembly line lengthened to 500 feet and its present daily output of 40 crawler tractors increased to 75.

Texasteel Now in Operation as Separate Oil-Field Company

Jess W. Emery is vice president and general sales manager and John F. Foster is secretary-treasurer of Texasteel Manufacturing Co., which on January 1 took over the oil-country supply division of Texas Steel Co., Fort Worth, Tex., and now is operating under a separate charter. Mr. Emery has been associated with Texas Steel Co. since 1932 and he has been engaged in the sale of oil-well supplies 20 years, specializing in pumping equipment. Mr. Foster was in the service of the old

Jess W. Emery *John F. Foster*

Texas Rolling Mill Co. in an executive capacity from 1909 to 1926, and he has been with Texas Steel several years.

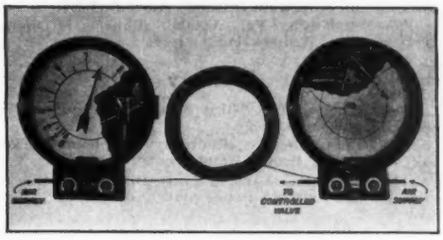
Texasteel Manufacturing Co., of which Judge George W. Armstrong, head of Texas Steel, is president, will manufacture the line of oil-field pumping equipment formerly made by Texas Steel, and it will buy all its steel requirements except structurals from Texas Steel. The two companies are operating under wholly separate managements.

Diesel Rig for California Use

The Kern Drilling Co. of Bakersfield, Calif., has received a Wilson portable drilling rig powered by two diesel engines. The Cummins 200-horsepower type L-6 engines are mounted on a structural-steel base to drive the drawworks and the slushpump. Each engine has six cylinders and develops its rated power at 800 r.p.m. This rig is similar to the scores of Cummins powered rigs used in the Texas and Oklahoma fields. Because of the light weight and compact size of the Cummins diesels, the Wilson rig purchased by the Kern Drilling Co. is easily moved from one operation to another. This unit is the first of its type in California fields.

Brown Instrument Co. Develops Remote-Transmission System

Pneumatic remote transmission of measurement is the latest process-control development pioneered by the Brown Instrument Co., Philadelphia, Pa. It is designed primarily for remote measurement of process variables in atmospheres containing explosive gases where electrical measurement is not permissible. The system consists essentially of a transmitting indicating instrument at the point of operation and a receiver, which may be an indi-



cator or recorder, located at the remote master control-board.

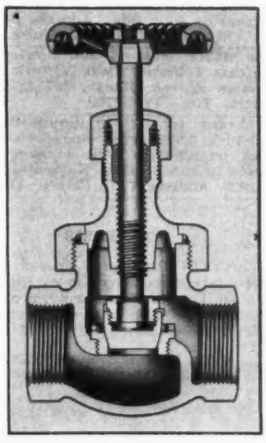
The remote-transmission unit is a simple, balanced air pilot, mechanically actuated, built into the indicating transmitter. The receiver is either an indicating or recording pressure gauge, calibrated in terms of the variables being measured.

Not only does Brown pneumatic transmission provide a safe and reliable means of transmitting measurement from the point of operation to a centralized control house, but it provides an indicator at the point of measurement. This eliminates guesswork and encourages operators to attain the best possible results.

Where accidental damage to the transmission line occurs, repairs can be made easily and quickly in the field, without special tools. Recalibration or compensation is never necessary when a transmission line is lengthened or shortened.

Crane Valve Designed to Resist Heat, Galling and Scoring

Iron-body globe and angle valves designed to withstand exceptionally severe service are being offered by Crane Co., Chicago. The plug-type disc is made of Crane nickel alloy and the body seat ring of Exelloy, a specially heat-treated chromium iron. This combination of metals for seating surfaces has been found to resist wear, temperature, galling and scoring. In addition, these metals are harder, stronger and tougher than metals ordinarily used in iron valves.



These valves are recommended for 150 pounds steam working pressure and 300 pounds on cold water, oil or gas lines. They are made in sizes one-fourth inch to 3-inch, and also are recommended for throttling service. Parts are interchangeable.

The stuffing-boxes are fitted with a gland and filled with high-grade packing and may be repacked while under pressure when wide open. These improved iron-body valves are identified as 314-½-P globe and 316-½-P angle.

Oil Man's Calendar

January

10-14—Detroit, Mich. Society of Automotive Engineers, Book-Cadillac Hotel.

13—Oklahoma City, Independent Oil Jobbers Association of Oklahoma.

15—Robinson, Ill. Annual meeting, Illinois-Indiana Petroleum Association, Woodworth Hotel.

17-21—Cleveland, Ohio, American Road Builders Association.

18—Oklahoma City, Interstate Oil Compact Commission.

24—Hot Springs, Ark. Governor Mariand's Petroleum Conservation Conference of Oil State Governors.

24-25—Minot, N. D., Northwest Petroleum Association, North Dakota Division.

27-28—Minneapolis, Minn., Northwest Petroleum Association, Minnesota Division, Hotel Radisson.

28—Pittsburgh, Pa. Annual dinner, Pittsburgh Traffic Club, William Penn Hotel.

February

3-4—Lubbock, Tex. Third Welding Conference, Texas Technological College.

7-9—Louisville, Ky., Kentucky Petroleum Marketers Association, Brown Hotel

14-15—Wichita, Kans. Kansas Oil Men's Association, twenty-fourth annual convention, Hotel Broadview.

14-18—New York, American Institute of Mining and Metallurgical Engineers, annual meeting, Engineering Societies Building.

17-18—Amarillo, Tex. American Petroleum Institute, Division of Production, spring meeting, Herring Hotel.

22-24—Milwaukee, Wis. Wisconsin Petroleum Association, Schroeder Hotel.

22-24—Columbus, Ohio, Ohio Petroleum Marketers Association, fifteenth annual convention and marketing exposition, Deshler-Wallick Hotel.

March

2-3—Indianapolis, Ind., Indiana Independent Petroleum Association, spring meeting.

7—Rochester, N. Y., American Society for Testing Materials, Spring Regional Meeting and Group Committee Meetings.

16-8—New Orleans, twenty-third annual meeting American Association of Petroleum Geologists, Roosevelt Hotel.

23-25—Los Angeles, Calif. American Society of Mechanical Engineers.

24-25—Fort Worth, Tex. American Petroleum Institute, Division of Production, spring meeting, southwestern district, Blackstone Hotel.

April

4-6—Cincinnati, Ohio, A.G.A. Distribution Conference, Netherland Plaza.

13-15—Cleveland, Ohio, National Petroleum Association.

13-15—Houston, Tex., Petroleum Industry Electrical Association.

17-21—Dallas, Tex., American Chemical Society.

19—Los Angeles, Spring meeting, Pacific Coast district, A.P.I. Division of Production, Biltmore Hotel.

20-22—Buffalo, N. Y., American Institute Mining and Metallurgical Engineers, Open Hearth Conference.

25-27—Hot Springs, Ark., Western Petroleum Refiners Association annual meeting.

28-29—Pittsburgh, Pa. Spring meeting, Eastern District. A.P.I. Division of Production, William Penn Hotel.

May

11-13—Tulsa. Natural Gasoline Association, Hotel Tulsa.

12-14—Tulsa. National Oil Scouts Association of America.

14-21—Tulsa. International Petroleum Exposition.

23-25—Wichita, Kans. American Petroleum Institute eighth midyear meeting.

(?)—New Orleans, La. American Gas Association Natural Gas Department.

June

6—Houston, Tex. Oil Workers International Union

16-18—Pittsburgh, Pa. Pennsylvania Grade Crude Oil Association.

20-24—St. Louis, Mo. American Society of Mechanical Engineers.

September

14-16—Santa Barbara, Calif., annual meeting Pacific Coast Gas Association, Biltmore Hotel.

CLASSIFIED ADVERTISING

Leases and Drilling Blocks

SECURITY ABSTRACT COMPANY
El Dorado, Arkansas
Fee, Lease & Mineral Ownership
on short notice. Ownership maps.

specializing leases twenty acres up dollar acre, East Tex., La., S. Ark. Owners—Attorney, Box 1122, Little Rock, Arkansas

New Mexico OIL LEASES WHOLESALE
40 acres at a time.
Roy G. Barton, Clovis, New Mexico

YOAKUM CO., Tex. oil lease S. halves Sec. 506 and 507 in ¼ by 2 mile tracts across "high," in favorable drilling sites for $15 per acre, $1 delay rental. Dr. J A. Robinson, Vets. Adm., Los Angeles, Cal

CHOICE LEASES, large and small tracts. South Texas, favorable trend. Brookfield Exploration Company, Milam Building. San Antonio, Texas.

DRILLING DEAL WANTED
40 Acres in the Clay City Field, with production on four sides. Address Box J-170. The Oil and Gas Journal, Tulsa, Okla.

50 ACRE lease ¾ mi. Bowles-Robertson east Telferner field, Victoria Co. See or wire Roscoe Gillean, 207 E. 31st St., Austin, Tex. Ph. 3709.

Leases for sale in Illinois Basin
You pick 2,000 acres out of 15,000 acre block on which a well is being drilled. Leases to run 5 years. No rental due until 1939. Address T. D. Colyer, Albion, Ill.

OIL LEASES

WANTED—Producing, proven, wildcat. We contact speculative money throughout the East. List your producing, proven, and wildcat leases with us. Send 3c stamp for Buyer's Questionaire.

OIL LEASE ASSOCIATES
Dept. OGJ, 141 Broadway
New York

DRILLING deals wanted. Thirty-five 20 Acre tracts in Lafitte, Jefferson Parish, La. field. Deep wells but big producers, 1500 to 2200 barrels per day. Only area available in this highly productive field. Interested operator having available equipment, experience and dependable references, address us for conference. Zodiac Corp., Ltd., 212 Hollywood Drive, Metairie, Jefferson Parish, Louisiana.

WE OFFER choice oil and gas mineral rights and leases, large and small tracts, favorable trend, act now and gain advantage, further information on request. P. O. Box 1156, Shreveport, Louisiana.

Leases and Drilling Blocks

WANTED—OIL LEASES—Must have geology. Large acreage—can finance well through lease sales. Address Box J-201, The Oil and Gas Journal, Tulsa, Okla.

HAVE STRUCTURE 10,000 acres leases New Mexico, best geology, location, test well partly drilled, fully equipped machinery, casing. Account death partner must arrange deal. Will sell entire or part. Also selected leases Huerfano County, Colo. on Alamo Structure against Pressey deep test well drilling. C. H. Radford, Box 614, Pueblo, Colorado.

80 A. offsets shallow oil production. 160 a. offsets million gasser. 60 a. offsets 70 bbl. well. All on pipe lines. Will drill well on any and assign. $1000. Mr. Budd, Osawatomie, Kansas.

ILLINOIS LEASES
GROUND FLOOR PROPOSITION for parties interested in drilling 5,000 to 10,000 acre tracts. Wire or write G. R. McClung, Anna Hotel, Anna, Illinois.

Leases and Drilling Blocks

TEXAS oil and gas lease near drilling well $10.00 per acre. Address Owner, Box 1203, Abilene, Texas.

INVESTIGATIONS AND APPRAISALS of oil properties and oil companies in KANSAS, OKLAHOMA, ARKANSAS, LOUISIANA, TEXAS, and NEW MEXICO.
PRENTISS T. MOORE, Agent
P. O. Box 946, Tulsa, Okla. — P. O. Box 64, Dallas, Texas

LEASE BUYERS, salesmen, operators, please notice. We own and have under operation Colorado's coming field in Huerfano County. We have proven wet gas and are drilling two deep oil tests. We offer selected leases against our drills also a geological recommended drilling block of 3,000 acres. Don't delay get connected with this developing field on the ground floor. W. S. Pressey, Pueblo, Colo.

FOR SALE—Leases & Royalty. Land in fee $4 and up per acre. Also drilling blocks. J. N. SWANSON, Sayre, Okla.

Leases and Drilling Blocks

HAVE 1200 acres, five year leases, Illinois Basin; 400 acres Posey County, Indiana. Now drilling nearby. Priced reasonable. Low rentals. Leo H. Graves, Farina, Illinois.

K M A LEASES
In the pool near Wichita Falls, Texas, are high priced, but I can get you some a great deal cheaper out a ways. Also real cheap leases.
JOHN WEBER
Oil Leases
1820 Fair Bldg., Fort Worth, Tex.

NEW Kansas oil field, 50 wells now producing. Oil lease 320 acres, three-eighths mile from well that came in 100 bbls. at 740 ft. Good structure. Price $10 acre. Address Box 10, Kincaid, Kansas.

BREWSTER COUNTY, TEXAS—Small and large tracts of land in fee. All minerals included—CHEAP—to brokers and dealers only. Write A. C. Smith, P. O. Box 200, San Antonio, Texas.

FOR SALE—1120 acres, 18 oil, and 4 gas wells, in Allen County, Kansas. 50 proven oil locations, plenty gas, and water for repressuring. Address Box J-211, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE three oil leases: Nowata County, Okla. 537 acres, 34 wells, present production eight barrels. 337 acres, 19 wells, present production fourteen barrels. Flooding immediate vicinity of both properties. Montgomery County, Kansas, 155 acres, 16 wells, present production fourteen barrels. All of the three above properties ideal for flooding. Each an exceptional buy. For complete information write or phone M. J. Regan, Box 206, Coffeyville, Kansas.

1000 ACRES for siliceous lime test. Six producing horizons first 1000 ft. Next 350 ft. Miss. lime, siliceous. 450 ft. more in Viola, Wilcox, and siliceous horizons. Buddenborg, Osawatomie, Kans.

Crude Oil Production

RODESSA CRUDE oil for sale from my Owen and other Miller County, Arkansas, wells. Shipments to be made via KCS Ry. from Layton, La. or Ark., to Lake Charles or New Orleans, La., Beaumont or Port Arthur, Texas. See William Monroe Layton, Rodessa, Louisiana.

Real Estate

FOR RENT OR SALE—50 by 140 ft. brick building, show room, front and rear truck entrance, wholesale, retail district. Rent reasonable. A. Faustgen, Wooten Hotel, Abilene, Tex.

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	*1 time*	*$5.00*
1 Inch	*13 times*	*4.50 per inch*
1 Inch	*26 times*	*4.00 per inch*
1 Inch	*52 times*	*3.50 per inch*

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

CLASSIFIED

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgement is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	*$1.05*	*$1.80*	*$2.55*	*$3.30*	*7 Lines*	*$2.45*	*$4.20*	*$5.95*	*$7.70*
4 Lines	*1.40*	*2.40*	*3.40*	*4.40*	*8 Lines*	*2.80*	*4.80*	*6.80*	*8.80*
5 Lines	*1.75*	*3.00*	*4.25*	*5.50*	*9 Lines*	*3.15*	*5.40*	*7.65*	*9.90*
6 Lines	*2.10*	*3.60*	*5.10*	*6.60*	*10 Lines*	*3.50*	*6.00*	*8.50*	*11.00*

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

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Tulsa, Oklahoma